Vol. 16 • No. 4

# Pacific Pulp & Paper Industry

APRIL 1942

# TO MILL MEN THINKING ABOUT THE FUTURE . . .

● After victory, will you be satisfied with your old markets? Will you be satisfied to make the same old grades? Will you be satisfied with your present cost of production? Or do you feel you could profitably make some improvements?

● This message is addressed to those mill men who believe that ***now*** is the time to consider such important matters.

● In recent years, Black-Clawson-Shartle-Dilts have helped many mills work out valuable improvements. One of our client mills dreamed of a diagonal creped paper . . . and together, we made it possible. Another dreamed of longitudinal flutes . . . again we helped them get the desired result. Similarly, we may be able to bring ***your*** dreams to practical reality.

● At the present time, our staff of trained sales engineers has but one job . . . to help you get the most out of your present equipment . . . to help you plan for the future. If you could use a trained observer, without incurring the slightest obligation, write us when you want him to call.

***The Black-Clawson Company, Hamilton, Ohio.***
***Shartle Division, Middletown, Ohio.***
***Dilts Division, Fulton, N. Y.***

**BLACK-CLAWSON**

Pacific Coast Representative, MR. ROBERT PETRIE
3206 42nd Ave. N. E., Portland, Oregon

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MILLER FREEMAN
President

LAWRENCE K. SMITH
Manager

HARLAN SCOTT
Editor

KEMPER FREEMAN
Production Manager

MILLER FREEMAN, JR.
Circulation Manager

OFFICES

Seattle

PUBLISHING OFFICE
71 Columbia St.
Tel. MAin 1626

Portland

Louis Blackerby
1220 S. W. Morrison St.
Tel. AT. 8890

San Francisco

Stuart F. Leete
121 Second St.
Tel. GA. 5887

Los Angeles

124 W. Fourth St.
Tel. MUtual 5857

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# British Columbia Raises Hemlock Log Price

**Increased $2 per 1000 board feet, from $13 to $15 to step up available volume—May provide surplus for export to U. S. where logs are badly needed to maintain maximum pulp production—Move is in line with agreement between U. S. and Canada to pool all resources in the joint war effort.**

● Subject to final approval by the War-time Prices and Trade Board, the price of hemlock logs in British Columbia has been increased $2 a thousand board feet, making the new quotation $15.

At the old price British Columbia hemlock was considered out of line with the market position as a result of rising costs of production. The $13 rate was also about $5 less per thousand than the prevailing figure in the state of Washington, where large quantities of B. C. hemlock have been shipped in recent years.

Under the new price setup it is expected by Canadian officials that loggers will have adequate incentive to increase production at a time when British Columbia is faced with a critical log shortage.

The Timber Control, in announcing the higher price, also had in mind the fact that by increasing log production a greater surplus for export would be created. Washington state pulp mills have been anxious to increase their purchases in British Columbia and, in consideration of the fact that much of their production has been allocated for Lend-Lease and munitions purposes, they have felt entitled to a fair share of the British Columbia cut.

● Although this increase in the price of British Columbia hemlock does not fully equalize it with the price in Washington, it is considered a step in the right direction in that it will tend to stimulate log production. And, the expansion of raw material production is in line with the words and spirit of the agreement reached last December between the United States and Canada whereby it was agreed to pool all resources in the common war effort.

Until recently all timber from Crown Grant lands (fee simple ownership) could be exported without restriction. License was required for exporting timber from all other lands (where the party owning the timber does not own the land). Due to war conditions timber from both types of lands are now under export license control.

Timber export applications to export timber from the Province of British Columbia must be approved by a British Columbia export advisory committee of three loggers, three sawmill men and the chief forester.

The effect of the higher price will be chiefly felt in the licensed timber areas where large stands running heavily to hemlock instead of the more readily marketable Douglas fir have been left untouched because of the low prices hitherto obtainable. These areas are the chief source of supply for the British Columbia pulp and paper mills which will now have more pulpwood but at a higher price.

## Labor Shortage a Factor

● The whole log supply position, however, is dominated by the labor situation in British Columbia, and some logging operators express the opinion that the shortage of manpower in the woods is worse than it has ever been. Every camp has lost men to the fighting forces and war industries, and many of them have been operating with relatively inexperienced crews with consequent loss of efficiency.

Adverse weather conditions early in the year also resulted in less log production, and many operators were reluctant to embark on long-term development programs because of the hazards of the business for which there is little or no allowance in Canada's income tax system.

"Conditions have changed so drastically from one year to another that few men are ready to risk large capital outlays in logging," one operator declared. "The cost of labor and equipment and supplies has been mounting steadily, along with taxation. Anyone entering the business under these conditions must have a reserve to meet unforeseen difficulties, but taxation makes such provision difficult if not impossible."

## Alarmed At Growing Exports

● Meanwhile the operators of pulp and paper mills in British Columbia are expressing alarm at the heavy exports of hemlock pulpwood logs. They point out that in 1940 the exports of hemlock and other pulp species to the United States from British Columbia amounted to nearly 150,000,000 board feet out of a total cut of about 862,000,000 feet, or 17 per cent, while last year the exports rose to more than 190,000,000 feet out of a total cut of 803,000,000 feet, or 23.7 per cent.

The amount of hemlock available for British Columbia industry was thus 100,000,000 feet less in 1941 than in 1940. In view of the demand for nitrating pulps used in the manufacture of munitions, an inventory shortage as of December 31, 1941, was created amounting to 72,000 feet.

It is expected that, in spite of the higher prices being paid for hemlock, log production as a result of labor shortage and other factors will be considerably less this year than in 1941. The estimated increase in consumption by the pulp and paper industry in British Columbia is about 88,000,000 feet. In addition, lumber mills in British Columbia are using more hemlock.

If, for the sake of calculation, there is a 10 per cent reduction in the total cut of hemlock this year, and exports continue at the 1941 level, the overall shortage will amount to more than 260,000,000 feet. Even if there are no exports

this year and if production equals that of 1941, supply and demand will barely balance.

### Joint Statement of War Production Policy

The increase in the price of British Columbia hemlock logs from $13 to $15 per thousand board feet to stimulate production sufficiently to provide a surplus for export to Washington pulp mills, is in accord with the statement of War Production Policy for Canada and the United States which was released December 23, 1941, by President Roosevelt with the following comments:

"The Joint War Production Committees of Canada and the United States have unanimously adopted a declaration of policy calling for a combined all-out war production effort and the removal of any barriers standing in the way of such combined effort. This declaration has met the approval of the Canadian War Cabinet. It has my full approval. To further its implementation, I have asked the affected departments and agencies in our Government to abide by its letter and spirit, so far as lies within our power. I have further requested Mr. Milo Perkins, the Chairman of the American Committee, to investigate, with the aid of the Tariff Commission and other interested agencies, the extent to which legislative changes will be necessary to give full effect to the declaration.

"Through brute force and enslavement, Hitler has secured a measure of integration and coordination of the productive resources of a large part of the continent of Europe. We must demonstrate that integration and coordination of the productive resources of the continent of America is possible through democratic processes to free consent."

### The Joint Statement

"Having regard to the fact that Canada and the United States are engaged in a war with common enemies, the Joint War Production Committee of Canada and the United States recommends to the President of the United States and the Prime Minister of Canada the following statement of policy for the war production of the two countries:

"1. Victory will require the maximum war production in both countries in the shortest possible time; speed and volume of war output, rather than monetary cost, are the primary objectives.

"2. An all-out war production effort in both countries requires the maximum use of the labor, raw materials and facilities in each country.

"3. Achievement of maximum volume and speed of war output requires that the production and resources of both countries should be effectively integrated, and directed towards a common program of requirements for the total war effort.

"4. Each country should produce those articles in an integrated program of requirements which will result in maximum joint output of war goods in the minimum time.

"5. Scarce raw materials and goods which one country requires from the other in order to carry out the joint program of war production should be so allocated between the two countries that such materials and goods will make the maximum contribution toward the output of the most necessary articles in the shortest period of time.

"6. Legislative and administrative barriers, including tariffs, import duties, customs and other regulations or restrictions of any character which prohibit, prevent, delay or otherwise impeded the free flow of necessary munitions and war supplies between the two countries should be suspended or otherwise eliminated for the duration of the war.

"7. The two Governments should take all measures necessary for the fullest implementation of the foregoing principles.

"Members for Canada: G. K. Shiels, Chairman; R. P. Bell, H. J. Carmichael, J. R. Donald, W. L. Gordon, H. R. MacMillan.

"Members for the U. S.: Milo Perkins, Chairman; J. V. Forrestal, W. H. Harrison, R. P. Patterson, E. R. Stettinius, H. L. Vickery."

# Joint Meeting to Discuss Materials Situation

**Annual meeting of Superintendents and TAPPI will be held June 5, 6th at the Portland Hotel with Robert T. Petrie as General Chairman.**

● The availability of strategic materials used by the pulp and paper industry will be discussed at a symposium to be featured at the Annual Joint Meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association and the Pacific Section of TAPPI, which will be held Friday and Saturday, June 5th, 6th, at the Portland Hotel in Portland, Oregon. A number of equipment and supply men have been asked to present data relative to the availability of their equipment and materials for use by the pulp and paper industry.

The decision to feature this timely subject was made at a meeting of the officers of the two associations held in Portland, March 31st. At that time Merrill E. Norwood, chairman of the Superintendents, announced the appointment of Robert T. Petrie of Portland as general chairman of the Joint Meeting. Mr. Petrie is Pacific Coast representative for Black-Clawson, Shartle Brothers and the Dilts Machine Works.

### Meeting Program

● The 1942 Joint Meeting will open on Friday, June 5th, with registration, mill visits and golf and bowling tournaments. In the evening an informal party will be held at the hotel.

Saturday will be a day of work. An early start at the usual "Wake 'Em Up" Breakfast will be followed by the morning meeting. Two papers will be presented and discussed. Then the symposium covering the availability of strategic materials used in the pulp and paper industry will be held.

The luncheon will feature a talk by a prominent speaker and the presentation of the Pacific Section of TAPPI's Shibley Award for the best paper given by a younger mill man at 1941-1942 dinner meetings.

### The Round Table

● The afternoon Round Table Discussion will be divided into a Pulp Panel and a Paper Panel. The former will be led by Carl E. Braun, chairman of the Pacific Section of TAPPI, and the latter by Merrill E. Norwood as chairman of the Pacific Coast Division of the Superintendents. On each panel will be two engineers, two technical men and two superintendents.

Serving with Mr. Braun on the Pulp Panel will be: J. H. McCarthy, resident engineer, Soundview Pulp Co.; L. R. Wood, resident engineer, Rayonier Incorporated, Grays Harbor Division; Harold Wall, technical department, Longview Fibre Co.; Svarre Hazelquist, technical department, Longview Mill, Pulp Division Weyerhaeuser Timber Co.; Thomas Grant, sulphite superintendent, Columbia River Paper Mills; and, E. A. Weber, sulphite superintendent, Oregon Pulp & Paper Co.

Assisting Mr. Norwood on the Paper Panel will be the following men: Lyle Burnett, supervisor, engineering department, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas; W. D. Rigg, chief engineer, Longview Fibre Co.; Fred A. Olmsted, technical supervisor, Camas; Fred Weleber, chief chemist, Hawley Pulp & Paper Co.; Charles Ackley, superintendent, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Lebanon, Oregon; and Gus Ostenson, paper mill superintendent, Camas.

On Saturday evening a banquet will be held. An interesting program for the ladies attending the meeting is being planned by general chairman Petrie.

### Make Hotel Reservations NOW

● As the Portland Hotel is constantly filled these days, Mr. Petrie urges everyone planning to attend to make his hotel reservations at once, directly with the hotel.

# Papermakers Meet— Elect New Officers

**U. Grant Farmer elected chairman for 1942-1943.**

With election of U. Grant Farmer, Fibreboard Products Inc., as chairman for the ensuing year, Papermakers & Associates of Southern California embarked on its second year of activity on April 9th at Carl's View Park Restaurant in Los Angeles.

Election of officers was the prime business of the April meeting. Supporting officers aligned with Farmer are: Charles Frampton, Fernstrom Paper Mills, Pomona, vice chairman; Frank Wheelock, Fibreboard Products Inc., secretary-treasurer; with the following newly elected members of the Executive Committee: Herman L. Joachim, consulting engineer, past chairman; Floyd Adams, United States Gypsum Co.; and John Van Ounsem, Pioneer Division, the Flintkote Company. Van Ounsem was secretary last year.

Papermakers & Associates of Southern California (PASC) was launched in May, 1941. In less than a year's time, and under the gavel of Mr. Joachim, the organization has grown to include 100 members, from an humble beginning of 12 interested men who formed the nucleus.

PASC has held meetings every other month during the first year and almost successively has shown increased regular attendance. Its membership includes most of the superintendents and technical men from mills in the southern California region.

The April 9th meeting got off to a good start when Frank Frampton, brother of the newly elected vice-chairman, won the door prize. The award is a regular feature of PASC meetings.

A message from retiring chairman Joachim was read inasmuch as he was out of the city. Also, a review of the work done by various PASC committees during the year was presented. All these reports were heard by some fifty members and guests present.

Newly-elected chairman Farmer presided at the April session.

Among those who appeared briefly to give reports and to forecast the coming year's activities, were retiring Secretary Van Ounsem, Archie Schwartz of the Program Committee, Frank Wheelock, new secretary-treasurer; Walter Genuit, Fernstrom Paper Mills, who was Nominating Committee chairman; Charles Frampton and Frank Adams, new Executive Committee members.

Election of 1942-43 officers occurred after dinner had been concluded.

Seated at dinner were the following: **Homer White**, Dow Chemical Co.; **Francis Mark**, United States Gypsum Co.; **Bruce Wallace**, Foxboro Co.; **Grover Brown**, Flintkote Co.; **Alonzo Hatch**, California-Oregon Paper Mills; **Frank Wheelock**, Fibreboard Products; **John Van Ounsem**, Fibreboard; **Bruce Brown, Jr.**, Fibreboard; **Roy Culp**, Flintkote; **Lloyd Ramsey**, Adhesive Products Co.; **E. J. Toliver**, Fibreboard; **Vincent P. Cole**, California-Oregon; **R. E. Cooper**, Flintkote; **W. Belleman**, Flintkote; **J. Walter Genuit**, Fernstrom Paper Mills, Pomona; **Jack Jamison**, Fernstrom; **George Cunningham**, National Oil Products; **Milo Harding**; **Bill Zietz**, Fernstrom; **Richard Buckley**, Fernstrom; **Archie Schwartz**, California Ink Co.; **Robert Baum**, Fernstrom; **Max Campbell**, Flintkote; **Parke Math**, California Ink; **J. E. Pearson**; **George Ford**, Fibreboard; **Willard Axtell**, Fibreboard; **Clarence Hazelton**, California-Oregon; **U. Grant Farmer**, Fibreboard; **J. A. Hartford**, United States Gypsum; **John Fogal**; **W. A. Kinney**, Flintkote; **Frank Eggert**, California-Oregon; **Frank Dilley**, Flintkote; **Richard Clayton**, United States Gypsum; **Frank Frampton**; **Charles Frampton**, Fernstrom; **Gus Swanberg**, Fernstrom; **William Monette**, Dicalite Co.; **Floyd Adams**, United States Gypsum; **Tom Rhodes**, Pacific Pulp & Paper Industry.

## Camas Girls' Basketball Team Wins First Place

● The girls' basketball team sponsored by Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, ended the season by winning first place in the Portland Inter-City League. During the 14 league games played these girls lost just one game, which put them in second place at the end of the first half of the season. They were neither beaten nor tied during the last half. Eight non-league games were played, with the Crown Willamette Paper Company team winning all eight games.

After winning the Inter-City league the girls entered the Southwestern Washington tournament at Raymond, playing men's rules against Pe Ell, Longbeach and Raymond teams. The Crown team won each of the games played.

## Peabody Urges Mills To Ask for Higher Priority

● Frederic H. Peabody, vice president of the Union Screen Plate Company, Fitchburg, Massachusetts, while calling on Pacific Coast mills early in April, urged them to ask for higher priority ratings for their screen plate needs.

"Due to the shortage of tin," said Mr. Peabody, "the rulings of the War Production Board now require a higher priority rating on screen plate orders than the ordinary A-10.

"So far I do not know of any mill having difficulty in obtaining a rating of at least A-1K on the basis of normal pulp and paper production. This is sufficient to permit us to supply the screen plates with a minimum of delay. It is important, though, that the mills ask for a higher rating than A-10. We say this for we are just as anxious as the mill operators to keep pulp and paper production rolling at full speed."

Mr. Peabody and John M. Fulton, manager of the Pacific Coast Supply Company, Portland, attended the TAPPI dinner in Port Angeles on April 7th, and called on the Pacific Northwest mills together. The Pacific Coast Supply Company represents the Union Screen Plate Company on the West Coast.

Mr. Peabody, who was accompanied by Mrs. Peabody, will return to Fitchburg by way of California.

## McKay Attends Personnel Conference

● George McKay, personnel and safety supervisor, Rayonier Incorporated at Hoquiam attended the annual Stanford University industrial relations conference.

**New Officers of PAPERMAKERS and ASSOCIATES of SOUTHERN CALIFORNIA, elected April 9th in Los Angeles. Left to right, FRANK WHEELOCK, Chief Chemist, Fibreboard Products Inc., Vernon, Secretary-Treasurer (the offices were combined); U. GRANT FARMER, Superintendent, Fibreboard Products Inc., Vernon, Chairman, to succeed HERMAN L. JOACHIM, who closed his term as PASC's first chairman; CHARLES G. FRAMPTON, Superintendent, Fernstrom Paper Mills, Inc., Pomona, Vice Chairman; FLOYD ADAMS, Manager, United States Gypsum Co., Southgate, Member of the Executive Committee; JOHN VAN OUNSEM, Technical Director, Pioneer Division, The Flintkote Co., retiring secretary, who was elected to the Executive Committee. Retiring chairman, Herman L. Joachim, who also joins the Executive Committee, was unable to be present at the election meeting.**

# TAPPI Holds Dinner Meeting At Port Angeles

**The sixth and last of the 1941-1942 series—Hear two papers, "Heat Transfer Characteristics of Indirect Heating for Sulphite Digesters," and "A Study of Flat Screen Dynamics"—Joint Meeting with Superintendents to be held at the Portland Hotel, Portland, June 5, 6th.**

● With sixty-five men attending, the sixth and last of the monthly dinner meetings sponsored by the Pacific Section of TAPPI was held at the Port Angeles Golf & Country Club, Port Angeles, Washington, the evening of April 7th. Vice chairman Edward P. Wood presided.

Two papers were presented at the Port Angeles dinner meeting. Francis W. Flynn, chemical engineer, Technical Department, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wash., gave his paper on "Heat Transfer Characteristics of Indirect Heating for Sulphite Digesters," which was entered in competition for the Shibley Award.

The second paper, "A Study of Flat Screen Dynamics," was presented by M. Lowell Edwards, assistant plant engineer, Longview Mill, Pulp Division, Weyerhaeuser Timber Co., Longview. Discussion followed the presentation of each paper. Both are published in this issue.

Mr. Wood, who as vice chairman has been in charge of the dinner meeting programs, expressed his appreciation to the members of the Pacific Section for their support during the year.

He said that the dinner meeting tentatively scheduled for Vancouver, B. C., in May had been cancelled due to the war.

Mr. Wood thanked Harold T. Fretz, chief chemist, Rayonier Incorporated, Port Angeles Division, for taking charge of arrangements. He was assisted by Myron Scott, office manager for Rayonier.

**TAPPI SPEAKERS,**
**M. LOWELL EDWARDS, who spoke on flat screen dynamics; and,**

**F. W. FLYNN, whose subject was heat transfer characteristics of indirect heating for sulphite digesters.**

### The Joint Meeting

● Vice chairman Wood announced that the annual Joint Meeting of the Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association will be held at the Hotel Portland, Portland, Oregon, June 5th and 6th.

The following men attended the Port Angeles dinner meeting:

● **O. C. Abbott,** Bristol Co., Seattle; **C. A. Anderson,** Crown Willamette Paper Co., Division Crown Zellerbach Corp., Camas; **Ray C. Austin,** Washington Pulp & Paper Corp., Division Crown Zellerbach Corp., Port Angeles; **Lee C. Baltzelle,** Pacific Indemnity Co., Seattle; **E. R. Barrett,** A. O. Smith Corp., Seattle; **C. V. Basom,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **H. L. Bibbins,** Electric Steel Foundry Co., Seattle; **Paul W. Blatter,** Rayonier Incorporated, Port Angeles Division, Port Angeles.

**W. E. Breitenbach,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **R. E. Bundy,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **John M. Carlson,** Soundview Pulp Co., Everett; **M. R. Cashman,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **O. S. Cauvel,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **E. J. Cavanaugh,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **Henry Charnell,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **Percy W. Christensen,** Pulp Division Weyerhaeuser Timber Co., Everett; **N. W. Coster,** Soundview Pulp Co., Everett.

**R. A. Dupuis,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **M. L. Edwards,** Pulp Division Weyerhaeuser Timber Co., Longview; **G. V. Emerson,** National Paper Products Co. Division Crown Zellerbach Corp., Port Townsend; **C. A. Enghouse,** Crown Willamette Paper Co. Division Crown Zellerbach Corp., West Linn, Ore.; **Francis W. Flynn,** Crown Willamette Paper Co. Division Crown Zellerbach Corp., Camas; **Harold T. Fretz,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **John M. Fulton,** Pacific Coast Supply Co., Portland; **Alfred Graef,** Pulp Division Weyerhaeuser Timber Co., Everett; **Lester T. Graham,** Link Belt Co., Seattle; **George Gouker,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **John G. Hardy,** Rayonier Incorporated, Port Angeles Division, Port Angeles.

**N. Q. Hartnagel,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **Norman Heglund,** Soundview Pulp Co., Everett; **Wm. S. Hodgson,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **Robert O. Holcomb,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **Meder Johnson,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **Glen D. King,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **R. A. Lawrence,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **Norman A. Lewthwaite,** National Paper Products Co. Division Crown Zellerbach Corp., Port Townsend.

**J. H. MacCarthy,** Soundview Pulp Co., Everett; **G. M. Marvin,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **V. L. Mauerman,** Pulp Division Weyerhaeuser Timber Co., Longview; **G. T. Mickel,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **F. A. Morey,** National Paper Products Co. Division of Crown Zellerbach Corp., Port Townsend; **C. T. Mulledy,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **E. E. Olfson,** Fibreboard Products Inc., Port Angeles Division, Port Angeles; **F. A. Olmsted,** Crown Willamette Paper Co. Division Crown Zellerbach Corp., Camas; **E. I. O'Neill,** Rayonier Incorporated, Port Angeles Division, Port Angeles.

**Frederick H. Peabody,** Union Screen Plate Co., Fitchburg, Mass.; **R. T. Petrie,** Black-Clawson Co., Portland; **Archie P. Ratliff, Jr.,** Pulp Division Weyerhaeuser Timber Co., Everett; **H. H. Richmond,** Electric Steel Foundry Co., Portland; **Walter A. Salmonson,** Simonds Worden White Co., Seattle; **Harlan Scott,** Pacific Pulp & Paper Industry. Seattle; **Myron A. Scott,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **Brian Shera,** Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **D. L. Shirley,** Link-Belt Co., Portland.

**Fred R. Sievers,** Crown Willamette Paper Co. Division Crown Zellerbach Corp., Camas; **P. S. Simcoe,** National Paper Products Co. Division Crown Zellerbach Corp., Port Townsend; **H. A. Sprague,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **John C. Steinberg,** Rayonier Incorporated, Port Angeles Division, Port Angeles; **J. B. Symonds,** The Sinclair Co., Seattle; **J. V. Venables,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **L. E. Warwick,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **J. W. Wenger,** Washington Pulp & Paper Corp. Division Crown Zellerbach Corp., Port Angeles; **Edward P. Wood,** Pulp Division Weyerhaeuser Timber Co., Longview; **E. H. Woodruff,** Rayonier Incorporated, Port Angeles Division, Port Angeles.

## Merrill Norwood Recovers From Illness

● Merrill E. Norwood, paper mill superintendent, Columbia River Paper Mills, Vancouver, Washington, returned to work the first of April, after having been away during the month of March because of illness. He was confined to St. Joseph's hospital for several days during the month.

## Hydrapulper Operating At Pacific Paper Board

● Pacific Paperboard Company, Longview, Washington, began operating its new Dilts Hydrapulper on the first of April. This machine has a capacity of 75 tons in 24 hours. Waste paper, either loose or baled, is dumped directly into the Hydrapulper from an elevator which is a part of the machine.

## Defieux and Hargreaves Attend New York Meeting

● O. T. Defieux, superintendent of steam plant, Crown Willamette Paper Company, Division Crown Zellerbach Corporation, Camas, Washington, and Thomas B. Hargreaves, maintenance engineer, Washington Pulp & Paper Corp., Division of C. Z., Port Angeles, left for New York City early in April to attend the April 13th meeting on conservation of critical materials, called by the American Paper and Pulp Association.

Mr. Defieux and Mr. Hargreaves attended the meeting as representatives of Crown Zellerbach Corporation to get first-hand information for the Coast mills. Important maintenance practices and operating techniques were expected to be brought out at this meeting.

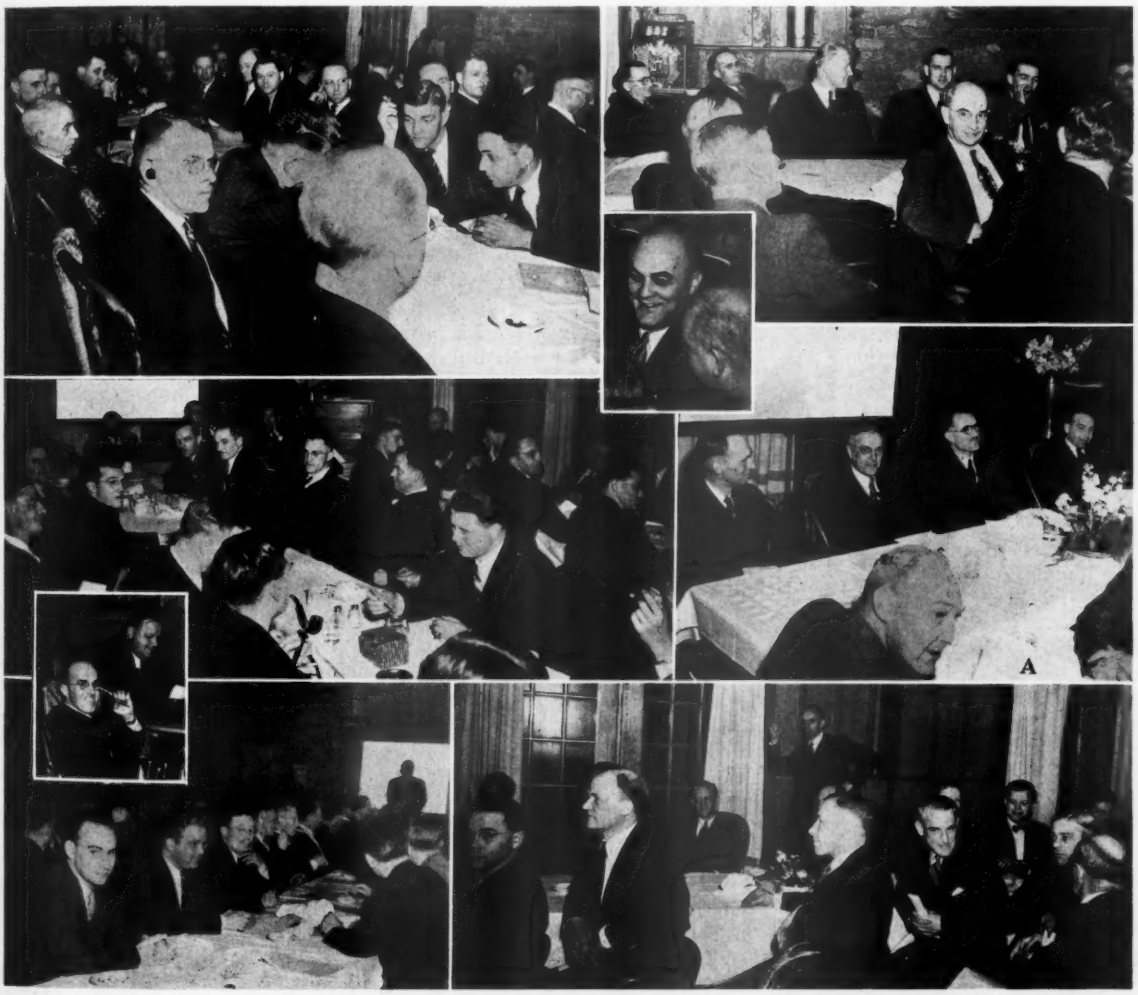
## Number 11 At Camas Speeded Up

● Number eleven paper machine of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, was shut down March 10th and 11th for changes to speed up the machine.

A second Beloit suction press was installed, as were some new motor drives and higher speed rolls. These plus minor changes have increased the wet end operating speed to 1500 feet per minute and the dry end to 1300 feet per minute, a substantial increase.

All of the new equipment for this installation was on order prior to the United States' participation in the war.

This machine will continue to manufacture the same grades as formerly.




**Flashlights at the PORT ANGELES TAPPI DINNER, April 7th. In "A" is the speakers' table. Left to right, M. LOWELL EDWARDS, Assistant Plant Engineer, Longview Mill, Pulp Division Weyerhaeuser Timber Co., who gave a paper on flat screen studies; FRED A. OLMSTED, Technical Supervisor, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, past chairman of the Pacific Section and a member of the Executive Committee; EDWARD P. WOOD, Technical Director, Longview Mill, Pulp Division Weyerhaeuser Timber Co., and Vice Chairman of the Pacific Section, who presided; F. W. FLYNN, Chemical Engineer, Technical Department, Camas; who presented a paper on heat transfer characteristics of indirect heating for sulphite digesters. ROBERT E. BUNDY, Resident Manager, Port Angeles Division, Fibreboard Products Inc., appears in the foreground.**

# A Study of Flat Screen Dynamics

**Dynamic refers to things in motion. This paper is concerned with the hydraulics of a flat screen in motion.**

M. LOWELL EDWARDS*

THIS topic is born of an argument—of many arguments. One of the most controversial subjects in the pulp and paper industry centers around the question of "What goes on in a flat screen?"

About a year ago following one of these arguments some of us attempted to design and build a device which we now call a Pressure Oscillograph. The device plots a curve of instantaneous pressure taken in the chamber immediately below the screen plate. The accompanying photograph, Figure 1, shows the completed device arranged for photographically recording the pressure curve. Figure 2 is an adaptation for visually scanning the pressure curve as it occurs.

The initial purpose of this paper is to exploit the use of the Oscillograph in studying the operation of flat screens. Along with our study of pressures we have performed other experimental work and carried on screen performance tests, the results of which we submit to you for the value they may have in establishing an understanding of various controversial subjects regarding the operation of this piece of equipment. With the exception of two minor cases all of our tests have been carried on in one mill on one type of screen operating at one speed on unbleached Western Hemlock sulphite pulp.

The flat screen is a familiar piece of equipment to all who follow the manufacture of pulp and paper. It consists briefly of a slotted screen plate mounted in the floor of a flume (Figure 3). A flow of pulp is carried through the flume over the screen plate in a direction usually parallel to the slots in the plate. Below the plate is an enclosed chamber and a pulsating mechanism designed to produce pressure waves across the screen slots. This pressure wave has the function of inducing fibres in the flow above the plate to pass downward through the slots into the chamber. A suitable discharge passage from the chamber is provided for withdrawing the flow of screen stock. An adjustable dam is usually present in the discharge passage to permit the operator to control the mean effective pressure within the chamber.

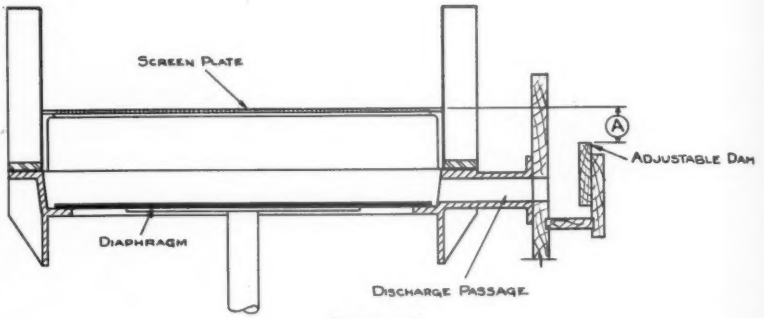



Figure 3

The pulsating mechanism usually consists of a rubber suspended diapragm in the bottom of the chamber actuated by one of two mechanical devices—first, the simple eccentric which gives the diaphragm a sine wave motion, and second, a cam arrangement which can be made to produce about any combination of rapid rise and slow fall, or slow rise and rapid fall that the machine designer may wish to use. All of the testing which has been done in preparation for this paper, except when specifically mentioned, has been with a screen using a cam and roller type pulsating mechanism having a rapid rise and slow fall. Other proportions of the screen we used are as shown on the drawing, Figure 3.

## More Pressure Waves Than Pulsations

● Without having it brought specifically to our attention our normal conception of the pressure wave in a screen chamber would be that the pressure would follow closely the diaphragm movement. In other words, we might expect that the pressure wave from an eccentric type diaphragm mechanism would follow closely the shape of a sine wave.

Figure 4 shows typical examples of pressure waves obtained from our tests. Curve 1 shows the actual movement of the diaphragm as produced by the cam and roller mechanism at a frequency of 10 pulsations per second. The other curves are pressure tests selected for their peculiarities in pattern, but produced in the screen chamber by the diaphragm movement shown in Curve 1. Curve 2 shows an actual pressure frequency of approximately 60 waves per second. Curve 4 has a wave which goes to a negative pressure of approximately 6 pounds per square inch, which indicates that the screen plate, while this test was being run,

*Assistant Plant Engineer, Longview Mill, Pulp Division Weyerhaeuser Timber Co., Longview, Washington. Presented at the dinner meeting sponsored by the Pacific Section of TAPPI at Port Angeles, Washington, April 7, 1942.

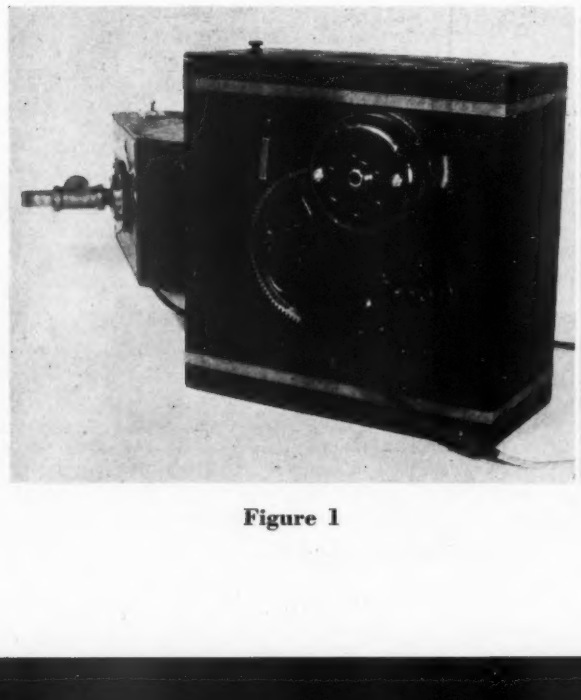


Figure 1

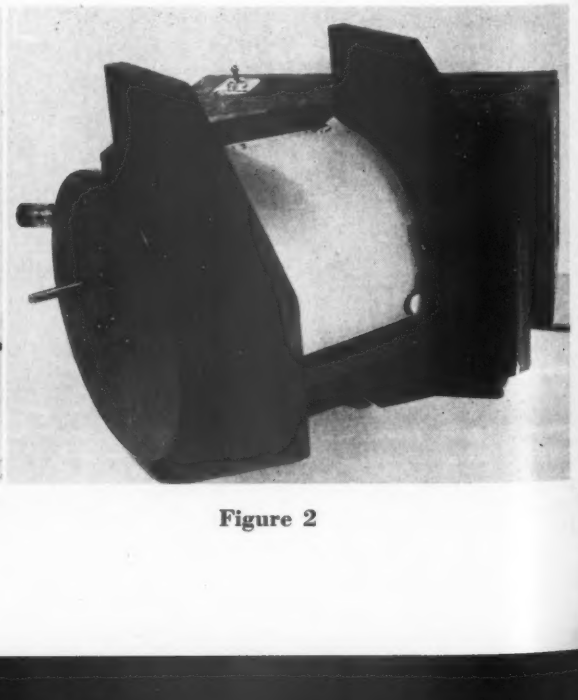


Figure 2

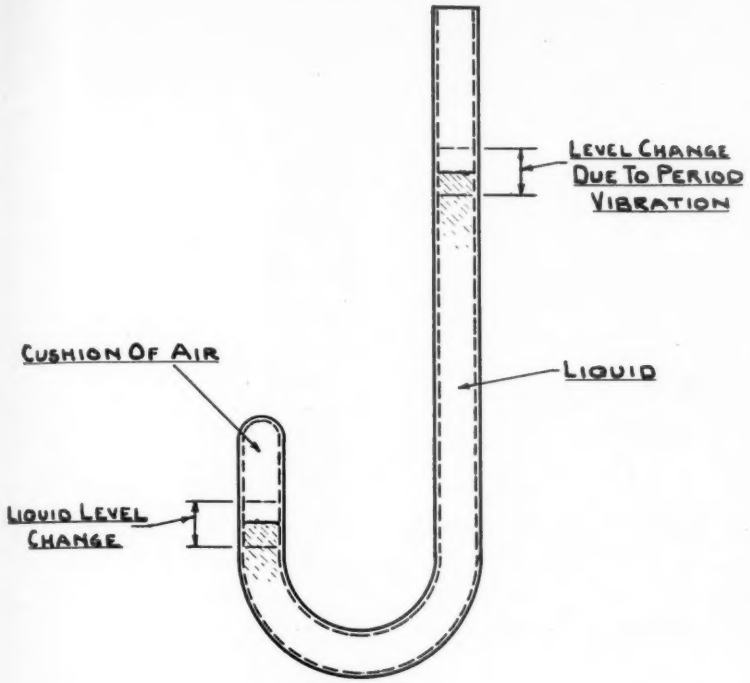



**Figure 5**

was subject to a periodic pressure load on the area of the plate totaling approximately 2,300 pounds downward.

The unusual frequency which occurs in these pressure waves may be explained by a **natural period vibration** which occurs within the pressure chamber. As we know, a natural period vibration such as occurs in the tuning fork and the vibrating string may take place only when we have present two physical conditions, which are, one, flexibility or stiffness, and two, weight or mass. These two factors must be arranged in such a way that the position or placement of the weight factor is dependent upon the flexibility factor.

## Stiffness and Weight Effect Vibration Rate

● The rate of vibration in an occurrence of this kind is determined by the extent of stiffness and the amount of the weight involved. Increase in the rate of vibration is directly proportional to the stiffness factor and inversely proportional to the weight factor.

Now this all may seem rather complicated, but it may be clearly illustrated by a demonstration with a glass U-tube (See Figure 5). If one end of the U-tube is plugged tightly to prevent the escape of air and water is poured from the top into the other side of the U-tube, the air which is trapped in the closed end of the tube will act as a flexible cushion which the water in the open end of the tube will press against. By shaking the tube vertically it will be seen that the water level in the open end of the tube will pulsate at a definite period. If more water is poured into the open end of the tube the frequency of the vibration will be decreased. On the other hand if a quantity of air is released from the closed end of the tube the rate of vibration will be increased.

Pressure vibrations due to natural period conditions in the screen chamber are caused by a weight factor of the liquid in the discharge passage. The stiffness or flexibility factor may come from any one or combination of three things: (1) flexibility of the metal screen plate or body of the screen chamber, (2) flexibility of that part of the rubber diaphragm which is exposed to atmospheric pressure below, and (3) any small quantity of air which may be passing through the chamber due to air leaks.

There is a marked similarity between our example of periodic vibration in the glass U-tube and the instance within the screen chamber where periodic vibrations occur influencing the shape of screen pressure waves. The actual vibrating flow in the screen chamber system takes place in the discharge passageway. The screen chamber proper, being entirely filled with an incompressible fluid, transmits the flexibility character of any of the parts of the chamber to the water in the discharge passage. The stroke of the diaphragm supplies the exciting impulse to start the vibration. The flexibility, which may exist in the screen plate itself or in portions of the rubber diaphragm as mentioned above, plays the same part in this vibrating system as is played by the air in the example of the U-tube.

We have all observed the operation of a row of flat screens by watching the pulp flow from the outlet passages wondering why some screens produce more pulp than others, why a particular dam adjustment works better on one screen than on another, and why the surface of the pulp flowing from a discharge should have a ripple surface due to a flow disturbance coming through the discharge passage.

We are not attempting at this date to answer these questions in full. We have tested, however, a section of seven consecutive screens and in Figure 6 show you pressure curves along with other data on the screens' operation. The tests show the screens as they came without special preparation or adjustment by the operators. In all cases the A.D. consistency of the pulp above the screen plates was kept between the limits of 0.335% and 0.380%. The plates were of the cast bronze chromium plated type and the tests were all taken approximately 30 minutes after the plates had been hosed.

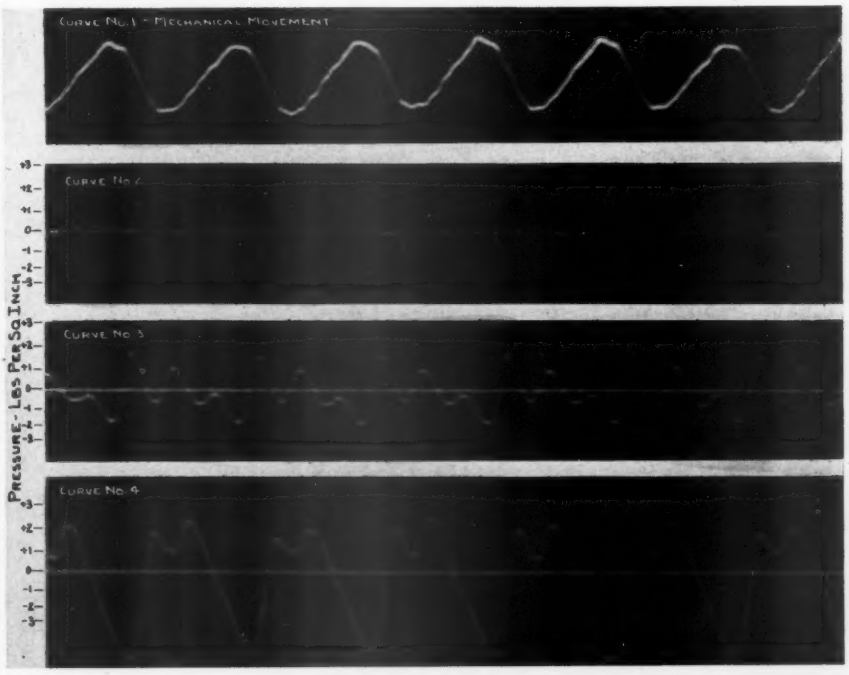



**Figure 4**

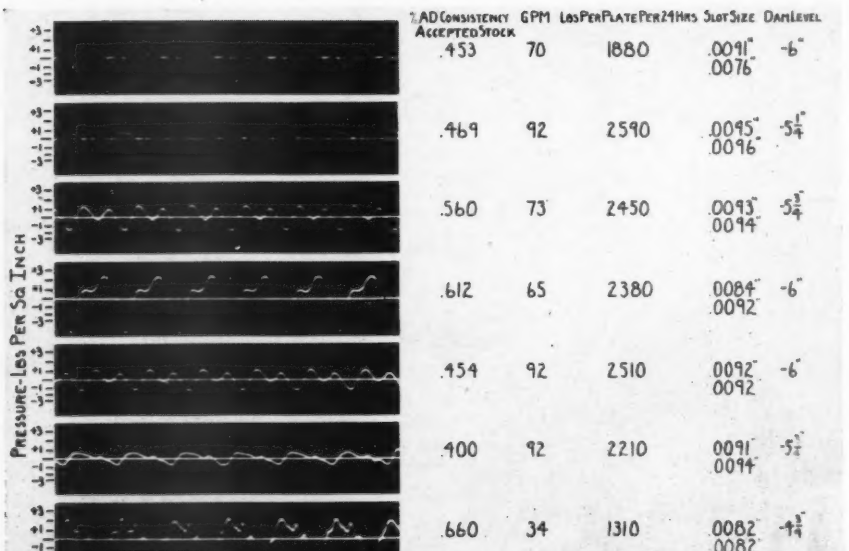



**Figure 6**

## No Correlation Between Pressure Waves and Pulp Production

● There is a wide range of wave pattern in these pressure curves. The amplitude of the pressure waves and the figures on production of pulp vary between wide limits but no noticeable correlation can be made between the two.

We conducted further tests which were confined to one screen chamber in order to establish as nearly as possible a uniform physical set up. These tests included four sets of cast bronze chromium plated screen plates having 0.006", 0.008", 0.010", and 0.012" slot widths with slots spaced ⅛" apart, and two sets of fabricated stainless steel plates having 0.009" slots with slot spacings of ⅛" and 1/16". The tests include pressure curves, Figures 7, 8, and 9, and complete performance, Figure 10, for a period of one hour following a thorough washing of the screen plates with a high pressure hose. Before the tests all screen plates had been recently cleaned with high pressure steam.

It will be observed on Figure 10 that the performance of the cast bronze plates gives a fairly consistent system of curves. Further, the stainless steel plates are similar to each other in performance but differ from the cast plates in pulp flow characteristics with respect to time after hosing. It will also be observed that between the two sets of stainless steel plates the ability to produce pulp is somewhat proportional to the number of slots in the plates.

Before going into further discussion of the above tests we will describe our conception of what occurs within the slot of a screen plate during operation.

## Action of Screen Slot

● A screen slot acts as a simple passageway between the screen chamber where pressure waves occur and the flooded flume above the plate where atmospheric pressure exists. The top of the plate is covered over with a flow of water containing a small percentage of pulp fibre.

In the fully primed screen the screen slot is subject to a continuous process of pressure reversal with complete submergence on both sides of the slot, in which the pressure for one moment is forcing an upward flow of water immediately followed by a momentary downward flow of water. This cycle repeats continuously as long as the screen operates.

It is well known that whenever water containing pulp fibre is forced through a small opening the fibre very quickly forms a mat over the opening. However, in the case of a screen plate where the opening (screen slot) is subjected to rapid reversal of pressure and consequently rapid reversal of flow a quantity of fibre always accompanies the water passing through the slot. Presumably the rate of pressure reversal in the flat screen is of such rapidity that there is a maximum of flow of pulp with the water through the slots and a minimum of actual matting of pulp to obstruct flow.

● As flow through the slot is the result of, and is dependent upon pressure, the study of pressure waves may prove to be a guiding light of importance in flat screen design.

In order to produce pulp in a screen the quantity of fibre in the down-flow intervals must be greater than that in the upflow intervals. The amount of additional pulp in the down-flow intervals over the up-flow intervals is exactly the quantity of pulp the screen produces.

We have no information on the quantity of flow upward and downward during these pressure waves; however, it must be very critical to changes in consistency.

Frequency of the pressure wave must also be of great importance in obtaining maximum screen performance.

The flat screen uses an adjustable dam in the discharge passage. This dam is placed below the level of the screen plate in order to form a siphon which obviously makes the vacuum wave predominate over the pressure wave. If it were not for this we would produce no pulp.

## Mat Formation

● If the dam is at too low a setting the suction may become too great, causing a permanent mat of fibre to form on the upper side of the plate which will carry over from pressure wave to pressure wave without being disturbed.

The formation of such a mat must be very critical to: (1) frequency of pulsation, (2) consistency, (3) level of the dam below the plate and (4) character of the fibre.

Satisfactory screen operation depends upon this mat being dispersed by each

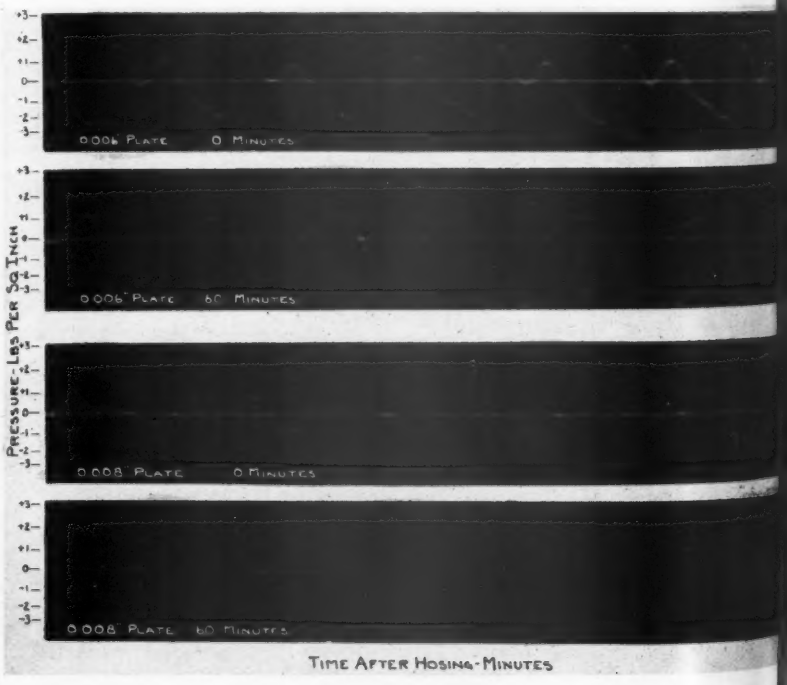



**Figure 7**

pressure wave from below.

A further study and understanding of the operation of a flat screen was aided by the construction of a small window in the side of the screen chamber. An electric light globe was mounted inside the chamber. After a few observations it was found necessary to add a float operated liquid level gauge so that we could watch any changes in liquid level at times when the window was completely submerged. Figure 11 is a photograph of our 2" diameter window showing the indicator of the liquid level gauge. When this picture was taken the chamber was completely primed with no air present.

Two other pictures which we were able to take with some difficulty, Figures 12 and 13, are views through the window showing the inside of the chamber after the screen had been stopped and air allowed to enter permitting the liquid level to recede below the window. These two pictures are of particular interest as Figure 12 shows the underside of the plate after one hour's operation of the screen without hosing of the slots. You will notice long "noodles" of pulp hanging from the milled grooves on the under side of these cast bronze chromium plated plates. Figure 13 was taken at exactly the same setting except after the operator had carefully hosed the plates from above. This photograph shows that all of the pulp which had been clinging to the under side of the plates had been removed by the hosing.

Pulp clinging to the under side of the cast bronze plates is illustrated further in the photograph to the right in Figure 14. The two views shown here are of the upper and lower surfaces of the same cast bronze chromium plated plate having 0.009" slots spaced ⅛" apart after five hours of continuous operation without hosing.

Before we discuss this further please refer to Figure 15 which shows similar views of a fabricated stainless steel plate with the same size slots on ⅛" spacing. The outstanding difference brought out by this series of photographs is that the under side of the stainless steel plates has retained practically no fibre while the cast bronze plate is covered with a heavy layer of matted fibre.

## Differences In Plate Design

● After careful examination of a number of screen plates plugged with fibre as shown in Figures 12 and 14 we are convinced that a primary difference between plates of these two types lies entirely in the deep groove construction of the under side of the cast plate. It is obvious from the appearance of the under side of the plates and from the consistency tests shown to the right of Figure 10 that the cast plates cause a progressive dewatering action in the flow of pulp passing through them. On carefully breaking down and observing pieces of the fibre mat removed from the grooves on the bottom side of the cast plates, it is apparent that pulp within the groove below the slot goes through a minute reciprocating piston action up and down in the slot during the screening process. On the down stroke it accepts pulp and water from above and on the up stroke retains some of the pulp and forces water back up through the slot. This reciprocating and dewatering action is responsible for the development of a "noodle" of tightly felted pulp fibres growing downward from the slot. These strips of heavy pulp are bound together so tightly by the felting action in the slot that, as shown in Figure 12, the "noodles" have sufficient internal strength to hold themselves together in long strings attached to the groove after the water level in the chamber has been lowered.

Nothing of this kind occurs in the fabricated stainless steel plate as shown in Figure 15. These photographs were taken after operating for a similar period of time under identical conditions to those of the cast plate shown in Figure 14. These stainless steel plates both with ⅛" and ⅛" slot spacing were clean on the bottom and free from clinging fibre after five hours operation as shown to the right.

Another study or observation which

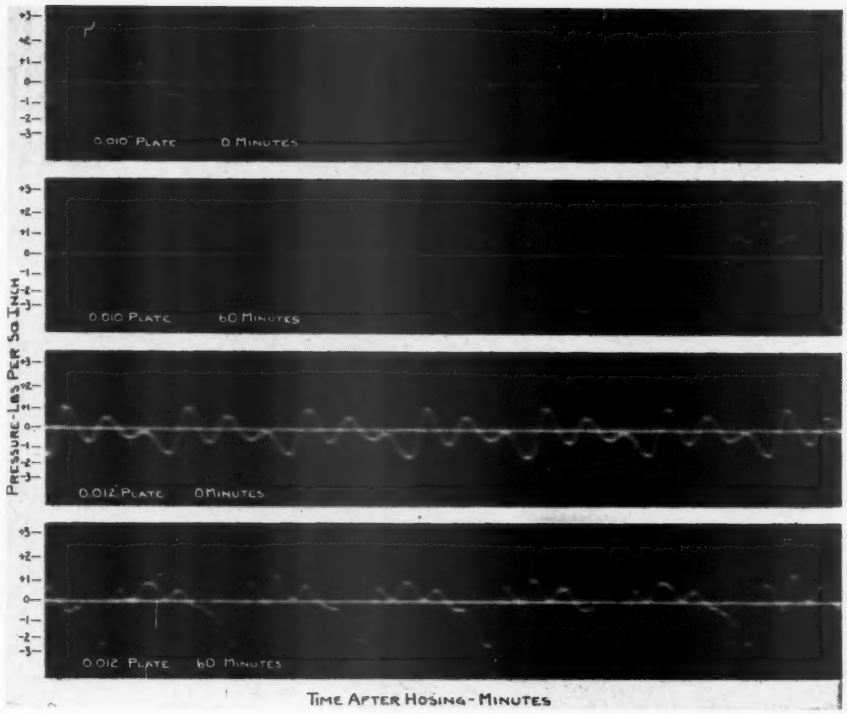

0.010" Plate 0 Minutes
0.010 Plate 60 Minutes
0.012 Plate 0 Minutes
0.012 Plate 60 Minutes
Pressure - Lbs. Per Sq. Inch
Time After Hosing - Minutes

**Figure 8**

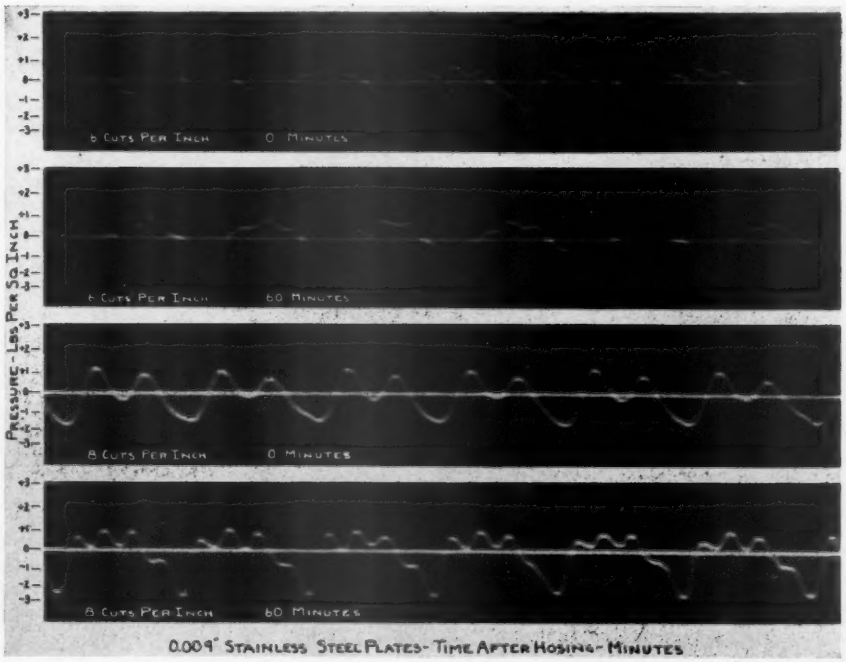

8 Cuts Per Inch 0 Minutes
8 Cuts Per Inch 60 Minutes
8 Cuts Per Inch 0 Minutes
8 Cuts Per Inch 60 Minutes
Pressure - Lbs. Per Sq. Inch
0.009" Stainless Steel Plates - Time After Hosing - Minutes

**Figure 9**

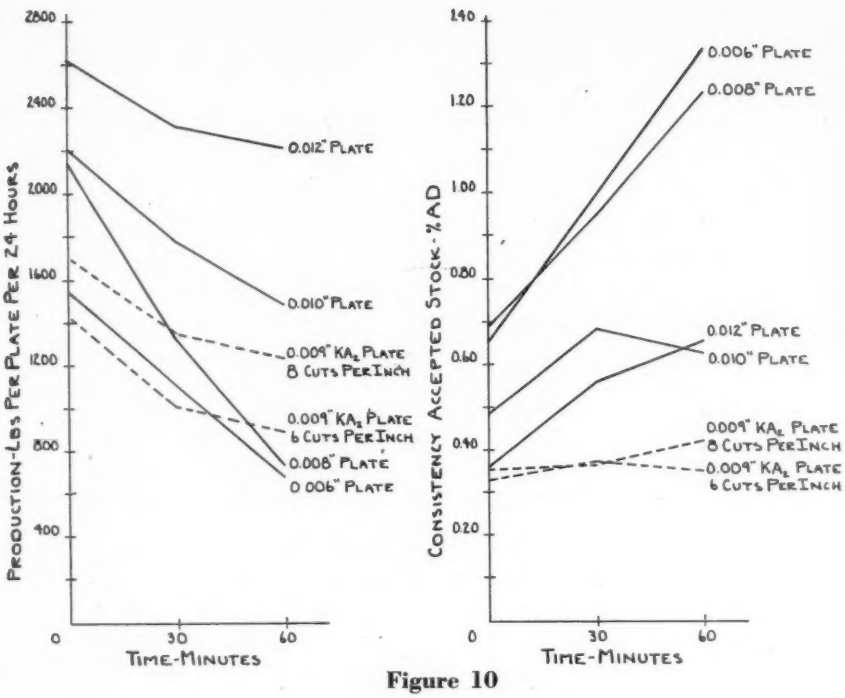



**Figure 10**

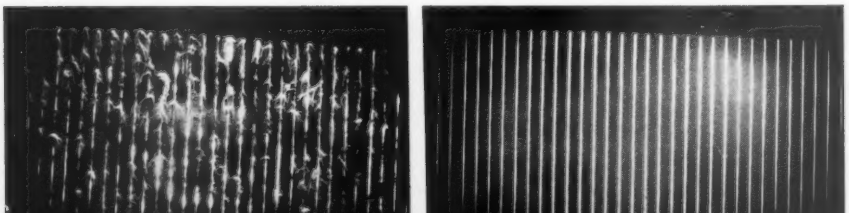


**Figure 16**

centers around the action of the fibres passing through the individual screen slot is that of the plugging action in the slots which takes place progressively after the plates have been hosed. Referring again to the photographs in Figures 14 and 15 and also to the curves shown in Figure 10, and to Figure 16 which shows to the left the same view as shown to the left in Figure 14 except that in the latter photograph illumination comes mostly through the slots in the plates, it is obvious that a great deal of the effective slot area of the plate is plugged up by small

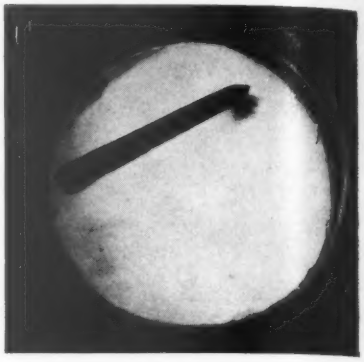


**Figure 11**

clusters of fibres and particles of other solid material which have wedged within the slot so tightly that the normal pressure waves caused by the diaphragm will not dislodge them. The other view to the right in Figure 16 gives us a good comparison by showing a plate identical to the one to the left except with slots which have been entirely cleaned by high pressure steam.

## Theory of Fibre Stapling Exploded

● You will observe from these photographs a condition which we have substantiated additionally by careful observation with a magnifying glass on a number of similarly plugged plates. In no cases are fibres held in the slots through a condition of "stapling" or bridging the bar between two slots by the two ends of the same fibre trying to go two ways. To us the theory of plate plugging by "stapling" has been completely exploded. If at the time of a down-flow through the slots a pulp fibre were to straddle a bar and start down two slots at one time, the next up-flow of water through these slots would dislodge it from this position.

The plugging of plates occurs when small particles of dirt and solid material become entangled with fibres as they attempt to pass through the slot. Due to the rapid hammering effect of the pressure waves these bundles of material, including fibre and dirt (see Figure 17), wedge so tightly between the slots that they remain until they are removed by hosing or some other method of cleaning.

Stainless steel plates with 1/8" slot spacing and the same type with 1/6" spacing appear to give no different performance so far as slot plugging is concerned.

**Figure 12**

**Figure 13**

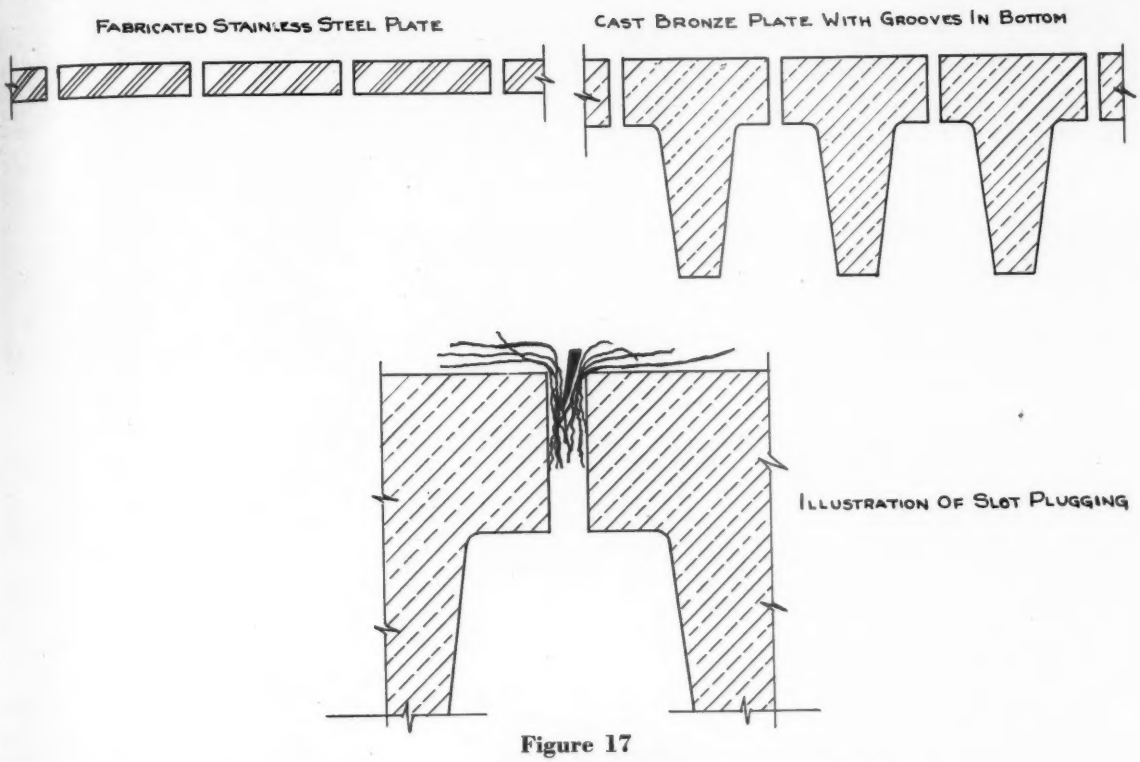



Figure 17

Figure 14 (top two)

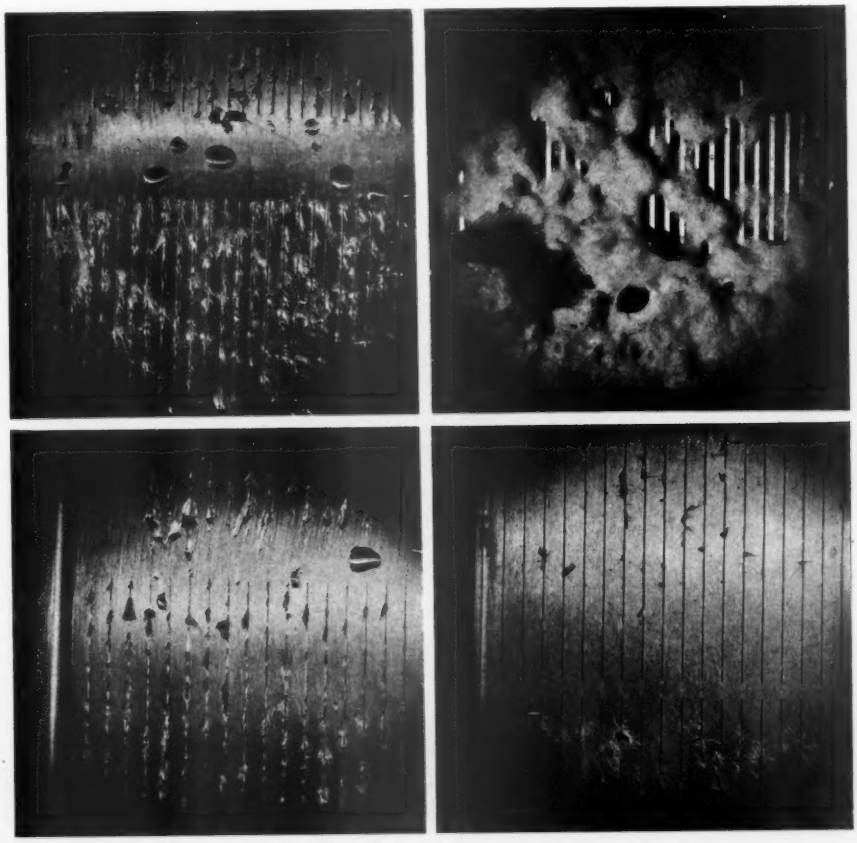


Figure 15 (bottom two)

Referring to the curves on Figure 10 and to discussion above there appears an advantage to the mill operator in favor of the fabricated stainless type of plate. The advantage lies in the flow characteristic with respect to consistency of the accepted stock which remains more or less constant for a prolonged period of time after the slots have been hosed. Also, the ability of these plates to produce pulp quantity does not fall off as rapidly as it does in the other type of plate. This quality in the plate is an advantage to the operator in that less attention is required for hosing.

## Study of Eccentric Weight Drive

• Figure 18 gives us information on a screen whose pulsating mechanism consists of a rapidly rotating eccentric weight attached to the bottom of the diaphragm. The frequency here is approximately 1,400 beats per minute. We were unable to obtain production or other performance data on this screen. The inertia principle upon which this vibrating mechanism works permits the diaphragm to adjust its stroke to the amount of work that the diaphragm is doing, as is illustrated by the upper two curves. The pressure curve at the bottom has a very consistent and uniform pattern. This may be accounted for by the fact that the frequency of the mechanical pulsating mechanism is higher than any natural period vibrating condition present in the chamber of the screen.

## No Conclusions on Effect of Wave Form

• Returning to the curves and tests shown in Figures 7, 8, 9, and 10 we offer at this time nothing conclusive on pressure wave form and its effect on screen operating efficiency. It is evident that smaller slots produce greater wave

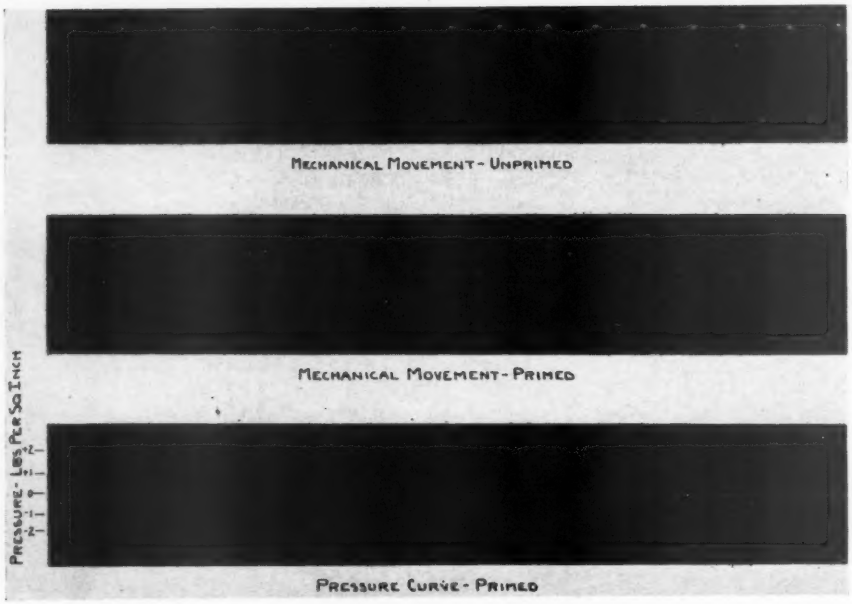



**Figure 18**

amplitude. Slot plugging also produces greater pressures. These cases are true so long as the pattern of the wave does not change. A change of wave pattern may occur in lieu of an expected increase or decrease in wave amplitude as slots plug up or as plates are hosed. A wave with more beats per cycle of the diaphragm is likely to have less amplitude and vice versa if other conditions are the same. At times a change in wave pattern may come without apparent cause.

One interesting case occurs in the two upper curves in Figure 7 when the pressure curve after one hour assumed a shape almost parallel to the mechanical movement curve shown at the top of Figure 4. At the time this pressure curve was taken the screen chamber and discharge passage were almost completely plugged with high consistency stock. As is shown the quantity of produced stock (Figure 10) was low and at a relatively high consistency. Great quantities of much heavier dewatered and inactive stock was present below the screen plate. It is our belief here that the presence of heavy pulp dampened any natural period vibrations which might otherwise have occurred.

## Resulting Observations

● From our experience to date with this testing we offer the following observations which may be taken for what they are worth.

(1) A long discharge passage of small cross-sectional area would tend to develop slower natural period beats and should therefore help in producing a controlled pressure wave pattern.

(2) Higher diaphragm frequencies should tend to eliminate odd pressure wave patterns.

(3) If the frequency of the diaphragm is equal to or greater than any beat frequency which might occur within the chamber, the pressure wave should follow a consistent pattern.

The frequency at which present flat screen diaphragms are operated may be determined more by the mechanical limitations of our pulsating mechanisms than by actual performance of the screen.

We imply here that higher diaphragm frequencies are desirable, but we do not know that this is the case. It is true that a great many operators may be actually screening pulp at a frequency of from 1,200 to 2,400 beats per minute due to natural period vibrations such as is clearly illustrated in Figure 4, Curve 3 where the pressure wave is three times as fast as the diaphragm movement. This triple pressure wave is not perfect in form as the last beat of the wave does not go above atmospheric pressure to cause back washing of the slots. It seems reasonable that this pressure curve would be much more effective as a screening agent if the wave were symmetrical with respect to the atmospheric line as is shown at the bottom of Figure 18.

The mechanical movement curves shown on Figure 19 indicate the effect of damaged bearings and other mechanical parts on the action of the cam. Curve 4 shows the pressure curve which results from the mechanical faults of the mechanism brought out by Curve 3.

## Summary

● In conclusion, our summary of the material presented in this paper is as follows:

(1) Pressure waves below the screen plate may occur in very complex forms, and their shape may be influenced greatly by the length and size of the discharge passage and the flexibility of the screen plate and other parts of the screen chamber.

(2) When a flat screen is operating properly all air is excluded from the chamber below the screen plate.

(3) Fabricated stainless steel plates have operating advantages over cast bronze chromium plated plates in that they produce stock at a lower consistency and they operate at a better sustained yield over a period of time after hosing.

(4) The stapling of fibres in two adjacent slots in a screen plate does not occur in any quantity to merit attention.

Much credit here must be given to Vern L. Mauerman[1] who has spent many long evenings assisting with tests used in this paper; also to E. P. Wood[2] whose counsel and willing assistance with laboratory facilities has been invaluable.

We hope that at some later date further experience in testing flat screens will permit contributions in their design and operation for the betterment of the pulp and paper industry.

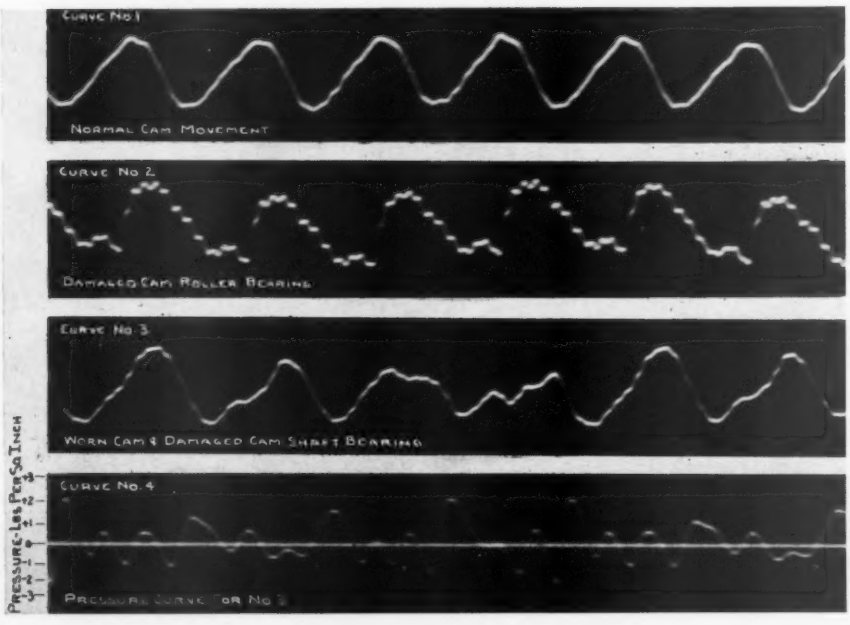



**Figure 19**

[1] Screen room foreman, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.

[2] Technical director, Pulp Division, Weyerhaeuser Timber Co., Longview, Wash.

# Crown Willamette Paper School Graduates Forty-One Students

**From the Fourth Year Class—Thirty-six receive certificates for completing three years' work; seventy-six for completing two years' work; ninety-two for completing the first year's course—Value of the school's contribution to the war program emphasized.**

THE Crown Willamette Paper School held its ninth annual exercises on March 10th and 11th, at the Crown Willamette Inn at Camas, Washington. Two hundred and forty-five students received certificates or diplomas for satisfactory completion of the work in their respective classes in this four-year industrial school.

The Crown Willamette Paper School was started in October, 1933, and since then 674 students have completed the first-year course; 392 the second-year course; 210 the third-year course; and, 145 have graduated from the fourth-year class and received diplomas.

In the early years of the school all of the students were employees of the Crown Willamette Paper Company Division of the Crown Zellerbach Corporation at Camas. As the opportunities for learning about the manufacture of pulp and paper through attendance at the classes were recognized many students came from divisions of the Crown Zellerbach Corporation outside of Camas.

During the 1941-1942 term the four courses included thirty students from the Crown Willamette Paper Co. Division at West Linn, Oregon; nine from the Western Waxed Paper Co. Division from North Portland, Oregon; two from the Western Transportation Division in Portland; five from the Crown Willamette Paper Co. Division's headquarters in Portland, and one each from the Zellerbach Paper Company Division in Portland, and the Pacific Coast Supply Co. of the same city.

Since the classes were so large that all four could not be accommodated at one time in any Camas dining room, a banquet was held for the first and second-year classes on March 10th and the third and fourth-year classes on March 11th.

A. G. Natwick, assistant resident manager, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, and dean of the Crown Willamette Paper School, presided as toastmaster at both banquets. He introduced the guests and the faculty of the paper school.

At the second banquet Mr. Natwick announced the election of Clarence E. Bruner, resident manager, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, West Linn, Oregon, as the third regent for the school. Prior to announcing Mr. Bruner's selection, he humorously outlined the reason why a third regent had become imperative. It seemed, reported Mr. Natwick, that with but two regents, Mr. Bankus, vice president of Crown Zellerbach Corporation, San Francisco, and Mr. Hanny, resident manager at Camas, the dean (himself) and the principal, Mr. Olmsted, could never get a decision on any matter. Mr. Bankus always took one side of a question and Mr. Hanny the other. Hence a third regent, Mr. Bruner, was needed to break the deadlock.

In introducing J. E. Hanny, resident manager, Mr. Natwick said he was originally responsible for the establishment of the paper school and without his constant interest and assistance it could not have functioned so effectively. Mr. Hanny welcomed the classes and told them that the school has improved steadily during its nine years of existence. Its organization and procedure has been studied by different industries all over the world, he declared, as an unique type of industrial education.

Mr. Hanny spoke of the hard work done by the faculty of the school which contributed so greatly to its success. He also thanked the lecturers from outside the organization for their contributions. Several were present at the banquet on the second night, including W. Norman Kelly, manager, and M. Lowell Edwards, assistant plant engineer, Longview Mill, Pulp Division Weyerhaeuser Timber Co.; Harry H. Richmond, chief engineer of the Electric Steel Foundry Co., Portland, and B. J. Pillette.

Dean Natwick read telegrams from company executives expressing their regret at being unable to attend and take part in the exercises. Earl G. Mason, dean of the School of Forestry, Oregon State College, wired his approval of the paper school's forward looking program.

## Albert Bankus Talks

● Albert Bankus, vice president, Crown Zellerbach Corporation, San Francisco, gave the principal address to the first and second year classes. His subject was "The Job Ahead."

He pointed out that there are plenty of jobs ahead, both collectively and individually. The degree of success attained is largely governed by how well the individuals prepare themselves for the future—for the job ahead.

According to Mr. Bankus, the job ahead staggers the imagination. In spite of the Allied countries and Russia struggling to prepare us for the opportunity to pursue "our way of life" we still have not made proper and full preparation. We should all put our collective shoulders to the wheel to attain the victory which will come, providing all work together.

Mr. Bankus pointed out that the term "employee" applied to all of the persons associated with the Crown Zellerbach Corporation, which includes the chairman of the board, the president and all others right down the line. All are working for the thousands of stockholders.

The persistence and great enthusiasm of resident manager J. E. Hanny is largely responsible for the founding and continuation of the Crown Willamette Paper

**The Head Table at the banquet for the First and Second Year Students. Left to right, F. W. FLYNN, G. H. GALLAWAY, CLARENCE ENGHOUSE, O. T. DEFIEUX, Professor BROR L. GRONDAL University of Washington; J. E. HANNY, Dr. CHARLES C. MILTNER, C.S.C., President of Portland University; A. G. NATWICK.**

**Continuing the Head Table from Mr. Natwick's left, ALBERT BANKUS, R. A. McDONALD, FRANK N. YOUNGMAN, C. L. DILLING, FRED A. OLMSTED, MALCOLM J. OTIS, GEORGE BAILEY, W. D. WELSH.**

**R. A. McDONALD, Crown Zellerbach Executive Vice President in Charge of Sales, speaking to the first and second year students of the Crown Willamette Paper School, draws a hearty laugh with a good story. Seated at his left are, FRANK N. YOUNGMAN, Vice President of Crown Zellerbach, Portland; and, C. L. DILLING, Manager of the Western Waxed Paper Company, Division of Crown Zellerbach, North Portland.**

School, according to Mr. Bankus. Not only has the school continued, but the attendance has grown, the scope and quality of the courses enlarged and improved. The school has attained a standard recognized by Oregon State College and University of Washington, to the extent that graduates may apply their credits toward a degree from either institution of higher education.

A comparison was drawn by Mr. Bankus, indicating how the older persons in the pulp and paper industry obtained their industrial "schooling" through long and laborous hours spent in the mill. Counseling the students he said, "The knowledge and skills you have obtained from the paper school classes are priceless. They cannot be taken from you." The skills and knowledge obtained from the classes will contribute toward advancement to higher stations; these "help fit you for the future."

The paper school is making an important contribution to the war effort, Mr. Bankus declared, through the training of men to take over the work of others called to the nation's armed services.

He emphasized that it is a definite policy of the company to promote from within the ranks of its own employees and cited as an example the fact that every resident manager has come from out of the group of men working for the corporation.

## R. A. McDonald Addresses Students

● R. A. McDonald, executive vice president of the Crown Zellerbach Corporation in charge of sales, told the first and second year classes, "You may be laying down the pattern here for the industrial university of the future. The work being done in the Crown Willamette Paper School is important to the industrial future for the next two decades."

The pulp and paper industry, he said, is making very definite contributions to the war program and the men and women in the industry are doing their part. The importance of the industry's part will increase as the war program unfolds. He spoke of the growing demands of our government for kraft paper and for nitrating pulp for the manufacture of smokeless powder. The Camas mill is producing much paper for war purposes directly and indirectly, and will produce more in the future. Besides the production another contribution will be made by the Camas mill and other plants in the industry through the utilization of idle machine shop time for the making of small parts. This program is just getting under way.

At the present time, said Mr. McDonald, no department of the government is suffering from a shortage of paper. The industry is taking care of the war program's need for pulp and paper first.

Dr. Charles C. Miltner, C. S. C., president of Portland University, emphasized, in his address to the first and second-year graduates, that students are expected to have (1) the habit of scientific investigation, and (2) a philosophical attitude. By the first of these the sciences exist; by the second the facts (obtained from investigation) can be viewed and interpreted in proper perspective for the best possible use to mankind.

"It is not enough to discover what the world is," he said, "but why. What's the meaning, the purpose, the end—what is it for?"

Mr. McDonald and Dean Natwick, assisted by Roderick M. Crosby, registrar of the paper school, presented certificates to the graduates of the first and second year classes. Mr. Bankus and Dean Natwick awarded the certificates to the third year class and diplomas to the fourth year class.

The programs on both evenings opened with the singing of "America" and closed with "The Star Spangled Banner." During the evenings the Crown Willamette Male Chorus, under the direction of Wayne Moffitt, sang a number of selections.

## The Third and Fourth Year Program

● On Wednesday evening, March 11th, professor Bror L. Grondal, College of Forestry, University of Washington, Seattle, and William D. Welsh of the Crown Zellerbach Corporation executive offices in San Francisco, spoke to the third and fourth year students.

Professor Grondal said he brought the good wishes of President L. Paul Sieg of the University, who regretted very much that he could not be present. Professor Grondal spoke as follows:

**Seated at the Head Table at the banquet for the Third and Fourth Year classes of the Crown Willamette Paper School were, left to right, GEORGE W. BAILEY, Professor, Third Year Class; G. H. GALLAWAY, Professor, Second Year Class; O. T. DEFIEUX, Professor, Fourth Year Class; C. A. ENGHOUSE, Assistant Professor and Technical Supervisor, West Linn mill; E. W. ERICKSON, Resident Manager, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend.**

**WILLIAM D. WELSH, Executive offices, Crown Zellerbach Corp., San Francisco; Professor Bror L. Grondal, College of Forestry, University of Washington, Seattle; A. G. NATWICK, Dean of the Paper School and Assistant Resident Manager of the Camas Mill.**

# And Now the Future

"And now, the future! For this commencement—and we often call graduation festivities 'commencemtnt exercises,' for its then that the graduate begins a career based upon the solid foundation of education—the topic I have chosen has nothing to do with pulp and paper manufacture. Nor has it anything to do with prophecy. It has to do with your own, individual future—and I use the singular, not the plural—for I want to talk to you as indviduals, not to you collectively as a group.

"You have completed a course of study that has been made available to you for your own benefit. Your faculty has expended much time and effort to place before you, concisely and succinctly, factual data that should be of great value to you. You have enjoyed unusual privileges; you have had a splendid opportunity to study, to think, to ask questions. You have passed carefully prepared and graded examinations. The quality of the instruction you have enjoyed has been recognized as reaching parity with that presented in universities and colleges.

"But now the future is before you. What are you going to do with the knowledge you have gained?

"Upon past occasions, I have complimented your school and student body as well as the officials of the Crown Willamette Division for making the school possible, but this evening I am going to be somewhat critical in attitude. In the past, with no immediate emergency presenting acute problems, graduates of this school could feel a certain degree of satisfaction in the mere completion of the course of training, and the prospect of future self-improvement that the school undeniably made possible.

"But times have changed. We are now engaged in a grim struggle, a war that must be won. Make no mistake about it—this war must be won even if it means the sacrifice of every personal comfort or personal opportunity for advancement, for unless this war is won, we will have no more free schools or liberty of any kind. Now with this all-important fact before you, what can you, as a graduate, as well as a real American do with your newly won honors? Search your soul for just a moment! Don't you feel many stirrings of new responsibility to the other man—to that young fellow up in that bomber who doesn't fear death if he can drop a bomb squarely upon an enemy target, even though he knows that his personal chance of survival may be slight? Yes, you have had a chance to improve yourself in a material way, but now you have a much greater opportunity.

## School Judged By Success of Graduates

● "You are graduating. You will soon have your diploma. Now let me say something disagreeable. It may mean nothing at all. No, this isn't a criticism of your school. It isn't a criticism of you, as an individual. I mean simply this. A school can be judged only by the success of its graduates. If the graduates are not successful, the school is not worth while, and the diploma becomes meaningless.

"What, men, is success in your case? If you are advanced to a better job in the near future, and draw higher pay, will that mean that you have been successful? Or is there something more that must be gained before you can be accounted a success — something that can be traced back to the school from which you are graduating? Is there something more that you must do before your fellow Americans can regard you as a success?

## What Constitutes Success

● "In the past we have all had some rather weird ideas of what constitutes success. Possession of material wealth has been a commonly employed yardstick. A wealthy man has usually been regarded as a successful man. Pushing ahead of the other fellow on the job, to get the better-paying position, has been regarded as success. Obtaining the greatest possible material advantage in exchange for an idea, such as an invention, has been regarded as success. Evasion of responsibility when things go wrong or do not work out, combined with a certain ability to grab the glory when things go right has often stamped a man as a success. But these things are all rather poor yardsticks. It is rather difficult to measure success; but you can, if you are willing, become truly successful. It is something that can not be denied to any one of us. If you can do your work so that you can honestly tell yourself that in your relationships with your fellow being you have done your level best to accomplish every task to the general advantage of everyone, and men really feel elated over it, even though you have gained nothing personally, you can't help attaining success. The other fellows will push you up—they won't hold you down—and don't let any cynic dispute this statement. The average man who is really successful always feels a little bewildered about it all—he may call it luck. Hs usually feels that his success is undeserved. But if he does begin to believe that it is deserved, he becomes a "stuffed shirt," and you all know how easily idols may fall and how badly they shatter when they hit bottom.

"Now, you want to be successful. You have taken some rather determined steps in the direction of success by completing the course of study in the Crown Willamette Paper School. But you have to prove something. You have to prove to all of your associates, the great institution in which you are a vital factor, to the world at large and to the faculty, that your diploma means something.

"Month after month your instructors have spent a great deal of extra time in an effort to give you the best possible chance for self-improvement by working up lectures, grading papers and by studying the subjects presented so that non-essentials could be culled out. Don't for a minute think that teaching is work, but a real teacher loves the job. He has to like it; otherwise he would flunk his own courses right at the first. You have studied under a faculty of successful men. You have not been bored by "stuffed shirts." None of your instructors have been men who have been "swelled up" by a mistaken sense of self-importance. Some have been better teachers than others. You learned more of this subject than of that one. You were, perhaps, critical in your attitude toward one or another of your teachers. One 'put it across' better than another. No two teachers are equally good—no two students are best. But didn't you notice this—even though some of your instructors held class sessions when they were physically tired or even ill, they did their level best? Couldn't you sense that? Wasn't it an inspiration to you? These men spent their time and energy to teach you even though it often meant personal inconvenience—and now you, in turn, owe them something. You must make that diploma mean something.

"Yes, I know that you feel that I am indulging in some platitudes in these remarks, but if the same remarks have been made a million times before, they apply now with greater force than ever before in history. You have a job ahead in not only attaining the success that I have mentioned, but in preserving your future opportunities. Every job today is a war-job. There isn't a particle of room for

**Continuing at the Head Table, left to right, J. E. HANNY, Resident Manager, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas; ALBERT BANKUS, Vice President, Crown Zellerbach Corp., San Francisco; CLARENCE E. BRUNER, Resident Manager, Crown Willamette Paper Co., Division of Crown Zellerbach Corp., West Linn, Ore.; FRED A. OLMSTED, Principal of the Paper School and Technical Supervisor of the Camas mill; ROBERT E. BUNDY, Resident Manager, Port Angeles Division, Fibreboard Products Inc.**

**Dr. Leo Friedman, Assistant Professor, Department of Chemistry, Oregon State College, Corvallis; E. H. VICARY, Chief Engineer, Central Engineering Dept., Port Angeles; PAUL V. MILLARD, Finishing Room Superintendent, Camas mill.**

a personal selfishness. We all have to fight for the common good, and today the man who is unwilling to fight for America is a loathsome traitor. None of you is in that class, for that sort of a person wouldn't avail himself of the opportunities presented by the unselfish men who constitute the faculty of the Crown Willamette Paper School.

"What can you do to make your job today a better war-job? How can you attain that measure of success that I have mentioned? Have you given this matter much thought? Isn't it something that you should think about?

### What Each Can Do

● "Here is something that you CAN do. Every man in the plant can't complete the course at one time. You have had that opportunity. Now, can you do your OWN job better? If you can, you deserve the diploma. You can help the other fellow out—you, too, can become an instructor. Just remember that the old time idea of secrecy—the concealing of trade secrets—is pretty well out of the picture. It is out of the picture because science has advanced so rapidly that laboratory control and scientific analysis has exploded many of the old secret ideas. So, too, is the old idea of making your own job more important by making it difficult for the other fellow who doesn't know so much about it to handle it. Become a teacher on your own account—but please don't take any advice too literally, lectures on the job may slow down production. But adopt the attitude of mind of a teacher—analyze your own job—try to write a lecture about it—and surprise yourself by finding how little you know about it and how much you **should** know. And as you develop your own job, as your efficiency increases and your capacity for assumption of responsibility increases, you will be bewildered by the success that you will attain. At the same time, you will be making a substantial contribution to the victory that America **must** win. You must, therefore, win a personal victory—one that will make the Crown Willamette Paper School diploma a wonderful document of accomplishment under the most glorious flag in the world."

# Blazing New Trails

**by WILLIAM D. WELSH***

IT is a privilege to join tonight in formalities of the most unusual graduating classes in the whole broad field of education — the Third and Fourth year classes of the Crown Willamette Paper School. It is altogether likely that an uninitiated speaker might have approached this speaking assignment by preparing the already threadbare admonitions to youth; youth who would be expected here tonight with sweaters and cords topped by caps and gowns. There likely would have been the usual verbal lanterns placed to guide youth around life's pitfalls. There would unquestionably have been the usual pointing with pride and viewing with alarm. Some significant gesture would have magically conjured up a rainbow to light youth's way to new frontiers, stern challenges and glorious opportunities. And then this same uninitiated speaker would likely have concluded by picturing the sad farewells of the morning after graduation when students take leave of home and loved ones to blaze their first trees on their journey through forests of experience.

Frankly, my assignment is much more difficult. There are no precedents or well-marked signposts to guide me. I am in the Crown Zellerbach lodge and therefore cannot stand up here and fool anybody. In this audience I find no adolescents to counsel. Rather, I am faced with mature graduates wearing business suits instead of the traditional caps and gowns. All but two of the fourth year graduates are married. One of their number is father of five children. Fraternity emblems of these graduates include service pins of Crown Zellerbach Corporation and the Union buttons of the collective bargaining units to which a number of them belong. And, actually, tomorrow morning, these graduates will resume work in the very college from which they are graduating tonight. In short, they are already on the job, with many trees already blazed by them with the double-bitted axe of trial and error.

By long and voluntary hours of study in classrooms and plant departments, these men have broadened their knowledge of an industry in which they have chosen to invest their years and their skills. They carried on the work in the mills . . . They attended classes faithfully. It might be well to emphasize that their studies are no picnic . . . The paper school is a stint, not a stunt . . . The courses are carefully and scientifically prepared . . . Had this not been so, the Crown Willamette Paper School would not have received the official recognition it now cherishes as an official part of the University of Washington and Oregon State college. It is also significant that the records of these students reveal that as they worked and studied, there has been no slackening of their responsibilities as citizens. I am sure we are all proud of their accomplishments and their citizenship—in the mill, in the Paper School, in their homes and in their communities.

Since my first contact with the Paper School several years ago I have been increasingly impressed by two outstanding elements—a faculty of mill management and supervisors admitting they learn while they teach; and a student body which exposes itself voluntarily to this unique system of industrial education because of an interest in the pulp and paper industry. They study without promise of reward other than the opportunity which frequently presents itself to those in this world whose lamps are trimmed and burning.

### Paper School Widely Known

● In the nine years of Paper School, there has been mounting interest concerning it. This interest extends far beyond the city limits of Camas. Requests to buy copies of the school's official textbooks for university, college and technical libraries have been numerous. Other pulp and paper companies and many individuals have written in for books. Within the past year, several similar efforts have been launched by other industries. In each instance the Crown Willamette Paper School was the pattern. Last year an edition of the Crown Zellerbach publication "The Years of Paper" was devoted to the paper school. There was such a wide demand for these booklets from outside sources that it was necessary to make a re-run of several thousand copies. A request for two of these booklets was received from the Soviet government at Moscow in the very month when Nazi panzers began their ill-fated blitz against that important Russian city. These instances are cited to indicate that the Paper School is becoming widely known as the seed patch of an unusual trend in industrial education.

### Preparing for the Future

● There are some interesting parallels to the preparation tonight's Paper School graduates made for the trail blazing job which lies ahead. For more than sixty years, officials of Crown Zellerbach and predecessor companies have prepared well ahead of unpredictable tomorrows. These officials realized that part of the earnings of good times must be ploughed back

**R. A. McDONALD, Executive Vice President in Charge of Sales for the Crown Zellerbach Corporation, congratulates ROBERT M. THOMPSON, first honor student in the first-year class. The other honor winners, left to right, JOSEPH A. STEWART, HARRY A. YOUNG, PAUL H. KIBBEY and HOWARD J. KROLL. Dean of the Crown Willamette Paper School, A. G. NATWICK, is at the right.**

*Executive Offices, Crown Zellerbach Corporation, San Francisco. Given before the Third and Fourth Year Classes at the Ninth Annual Graduation Banquet of the Crown Willamette Paper School, Camas, Washington, March 11, 1942.

into the plants and the business. They knew that reserves must be built and husbanded against the rainy days. It was this preparation that made it possible for Crown Zellerbach to weather a long national depression when the chips were down. For then it was a question of weathering the rainy days, or being drowned out. It is this preparation that prompted executives to maintain plants in tip-top shape for efficiency and safety. To reduce financial obligations so that today with America at war, it is not necessary to compete with the government for money necessary to carry on the business of making paper. It is this preparation that makes it possible to harvest timber again on company properties that were logged 54 years ago. It is this preparation that sees Crown Zellerbach pulp forests managed so that the annual growth is greater than the annual harvest. Some day you business men and graduates may have grandchildren and great-grandchildren working in company plants. You would have been encouraged for their sakes had you been privileged to attend a meeting of Crown Zellerbach executives in San Francisco the other day. For at that meeting appropriations were voted for the growing and planting and protecting of trees that none of these executives will ever live long enough to see harvested. Neither war, nor taxes, nor the unpredictable tomorrows could divert their vision from preparing the crops of trees for the needs and jobs of future generations.

There is another interesting parallel reflected in the long-range program of company workers. Like the company, they plan ahead so that each day will not be sufficient unto itself. Sitting around the table with management, they work out codes of working conduct and rates of pay for a full year ahead through the orderly medium of collective bargaining. Workers have joined earnestly with management in a program for safe working conditions and safe working attitudes. They have acquired valuable first aid skills so they can immediately minister to injured mates in those precious minutes before a doctor is able to get on the case. Through medical and hospital contracts and group insurance they have made provision for rainy days. Through participation in their own credit unions, they maintain a medium for systematic saving and for solving economic problems which in times past have vexed some workers.

There is still another encouraging feature to this employee preparation. They seem to be emulating the wise Swedish financiers who inspect the forest holdings rather than the mill properties of firms seeking loans. And it seems to me that most of the fourth year graduates here tonight must have looked into Crown Zellerbach Corporation and decided it was a pretty good firm in which to invest their years and their skills. For about 70 per cent of them have put their roots down in communities along the Columbia and Willamette valleys by building or buying homes and developing acreage as dwelling places for their families and as hedges against the unpredictable tomorrows.

It is especially noteworthy that nine of the ten fourth-year graduates from the West Linn division own or are buying their own homes.

By these same long-range desires and preparation, graduates of the Paper School are better equipped to blaze new and shorter trails to accomplishment. For four years they have been studying all they could of what is now known of the pulp and paper industry. In the stirring days which lie ahead, I am certain they will apply this preparation intelligently to the problems of plant, community and national welfare as the government challenges our ability to meet each new production requirement.

## Citizenship In War Time

● For we are in a war, and much will be demanded of us. . . . I think we all realize by now that the Gods of War didn't need a roadmap to find this community. . . . Since arriving here a week ago, I have seen blacked-out windows. . . . Serious faces watching a movie showing how to fight dread fire bombs. . . . Earnest men and women and children acquiring first aid skills. . . . Defense bond sales mounting. . . . Bombers flying overhead. . . . A growing list of men from mill and community joining armed forces of Uncle Sam. . . . Garden plots being spaded up for Victory Gardens.

Yes, the war has come to Camas. . . . Walking along your main street one day last week, I noted a sign in a window which read: "Let Roy Storms help you with your income tax." Now, I didn't know Roy Storms from Paul Bunyan's off-ox. But preparation of my income tax form is always an annual headache with me. And—like millions of other Americans, I do my share of moaning and groaning about taxes. So I dropped into Roy Storms' place of business to take him up on that sign. Mr. Storms was not in. Another gentleman there apologized for Mr. Storms' absence by saying: "He'll be a little late this morning. You see, it's his turn to be on alert as an air raid warden on the hill above town." On a desk was the picture of a boy in navy uniform. I was told it was a picture of Mr. Storms' son who had joined the navy. And suddenly I began to feel a lot better about my income taxes —and I decided that I had plenty of time to wait until Mr. Storms came down from the ramparts above Camas where he was protecting me and my kind from invasion by a sterner taskmaster than the American income tax man will ever be. I felt very certain that it was far more important that Mr. Storms was ON TIME and ALERT on the hilltop than it was for him to be on time at his office.

Yes, gentlemen, the war has come to Camas. A papermill worker dropped into a place of business here the other day and remarked that he was giving up cigars and making other economies so that he could buy more defense bonds to back up three sons who were in the United States Navy.

War has come to Camas and other pulp and paper communities. It was a pulp mill worker from a Rayonier mill at Hoquiam, Washington, who was cited by the navy department for being in a gun crew which brought down the first Jap plane at Pearl Harbor, going on from there to bring down two more planes. It was the son of a man who runs the newsprint mill's cafeteria at Port Angeles who wrote a glorious page in navy history at Pearl Harbor in that same hour. Marshall Dompier's shipmate wrote home about how the Port Angeles' boy perished. "Marshall's life wasn't taken, he gave it for his country," the letter from this shipmate reads. "He had rescued five of his shipmates and gone back for the sixth. This time he did not come back."

Down where the moonbeams and the lunar rainbows dip into the southern sea, Marshall Dompier and that sixth shipmate must have found each other. . . . For they didn't come back to collect for working that Sunday morning shift at Pearl Harbor. . . . And don't you think that if Marshall and his shipmate were willing to give their last full measure of devotion for $21 a month that we should be proud and willing to dig and deliver to keep planes flying, to keep men from dying, and to prove that a Japanese warlord was lying when he said that the peace from this war would be dictated in the White House, by Japan?

The honor rolls of the mill, the school and the homes of this community bear testimony to the fact war has come to Camas. War is out there in the big papermill . . . It is rumbling up the log chute. . . . It is surging through the beaters. . . . It is flying through the paper machines. . . . It is rolling into boxcars and onto scows en route to the American and allied forces of battle and supply. . . . For pulp and paper have enlisted for war in hundreds of different ways.

Paper has come a long ways in the past 400 years, a Shakespearean character in

**Crown Zellerbach Vice President R. A. McDONALD congratulates the second-year honor students. He is shaking hands with ROY R. TRUTTON, who received high honors in the second-year group. Left to right, LYNN W. ROBERTSON, CARROL C. ECKERT, EDDIE BURNETT, GEORGE A. LaHUSEN, LESTER E. SCHATZ and DEAN A. G. NATWICK.**

**Third year honor students are congratulated by Vice President Albert Bankus who is shaking hands with the winner of the first honors in the class, CARL E. GEHMAN. Left to right from Mr. Gehman, MILES CADY, ROBLEY A. BUTLER, H. R. CLODFELTER, J. C. PLANKINGTON and M. M. GRAHAM. J. E. HANNY, Resident Manager at Camas, appears on the right.**

King James VI threatened to behead another, ten times, charging: "Thou hast most traitorously corrupted the youth of the realm in erecting a grammar school; and whereas, before our forefathers had no other books but the score and the tally, thou hast caused printing to be used; and, contrary to the king, his crown and his dignity, thou hast built a paper-mill."

An Associated Press dispatch one day last week from this same England, sets forth that the English government has decreed it a punishable offense for anyone to burn or otherwise destroy paper which ranks high on the empire's list of war necessities. And while here in America we have seen countless uses of paper being applied to war needs, and the needs of those supplying war materials, the past several days have witnessed a most startling employment of paper in a wartime economy. For it required 300 railroad cars of paper, and the greatest single printing job in the history of the world, to prepare sugar rationing cards for 130,000,000 people.

Gentlemen, on December 7, 1941, an enemy of all that you have prepared for in this life stepped out from behind a dark curtain and plunged a dagger into the hearts of nearly 3000 Americans. . . . Within the hour, 130,000,000 other Americans promised dead men that we would "Remember Pearl Harbor." . . . And when their souls left their battle-broken bodies and set sail to join regiments immortal, that promise went with them to the God of the sea lanes and the battlefields. . . . If we are to keep faith with them, that promise must be made more than an empty phrase. . . . More than a song from a juke box. . . . More than the gilt lettering on a bit of costume jewelry. . . . That promise must be kept in blood and sweat and sacrifice. . . . For it is well to remember that in keeping this promise, we are working out our own salvation as a nation and as individuals. . . . Don't worry about our fighting men being on the job. They're out there in the cockpits, the battle turrets and the foxholes asking only that we keep sending them the tools they need to whittle down the Axis. Keeping the promise means we will have to adjust some of our thinking and park our prejudices and desires for the duration. There'll be damp pillows and broken hearts. We'll be planting the parking strips to potatoes and the nasturtium beds to rutabagas. . . . We'll be parking the Pontiac in the garage and jacking up the wheels. . . . We'll be trading accelerators for buggy whips. . . . We will walk to work and to the grocery store—and like it. . . . Remembering, I hope, that it hasn't been so very long ago that pioneers of this very region made round trips of forty and fifty miles to the Hudson Bay trading post at Fort Vancouver for a sack of flour or a jug of black molasses. . . . And if this country was good enough to live in then, it is good enough to work and fight for now.

Some time tomorrow, many of you will return to work in the Camas paper mill. . . . On your right as you approach the mill entrance make note of an honor roll of 125 millmates who are now in uniform. . . . On you left is suspended a large American flag. . . . Above that flag flies the deathless spirit of Colin Kelly. . . . Beneath that flag march the men of McArthur in the Philippines; the Marines and workers who fought side-by-side against superior odds on Wake Island; yes, and the 125 men of your mill who traded their working clothes for uniforms . . . As you come abreast of the flag and the honor roll, I wonder if you won't give them at least a mental salute. . . . It will be your way of saying that behind the flag and the honor roll, management and men of your mill are keeping things rolling for America as she faces her darkest and most magnificent hour. . . . Management and men, pledging their full measure of whatever is required to hasten the day when peace shall fix its star, high, scintillating and secure.

## Honor Students

● The honor students of the four classes were given special awards, the announcements being made by Dean Natwick.

First Year—Robert Thompson, first; Joseph A. Stewart, second; Paul Kibbey, Howard J. Kroll and Henry A. Young, honorable mentions. Second Year—Roy R. Trutton, first; Lynn W. Robertson, second; and, Eddie Burnett, Carrol C. Eckert, George A. LaHusen of West Linn, and Lester Schatz, honorable mentions. The first honor students of the first and second year classes received copies of "Modern Pulp and Paper Making," the textbook of the Crown Willamette Paper School compiled by the faculty, and second place students received subscriptions to PACIFIC PULP & PAPER INDUSTRY.

Third Year—Carl E. Gehman, first; Miles A. Cady, second; and M. M. Graham of West Linn, and Robley A. Butler and John C. Plankington, honorable mentions. Fourth Year—Harol L. Roley, first; Harlyn B. Scobba, second; and E. C. Cooley, John Letourneaux, George Nelson and Ralph K. Pratt, honorable mentions. Mr. Gehman received a set of three textbooks on "The Manufacture of Pulp & Paper." Mr. Roley and Mr. Scobba were awarded a week's tour of the Crown Zellerbach mills in the Pacific Northwest with all expenses paid.

## Students in the Armed Forces

● The following men, who would have completed their first or second year, are serving in the armed forces of the United States:

First Year—Milton R. Baum, D. L. Jensen, F. W. Monoghan, Joseph McCormick, D. L. Brinson, W. Perry Knuth, Mac N. Carnine.

Second Year—Dale L. Frymire, Howard Surbeck, B. J. Jacoby, Herbert E. Cash, Thomas Bennett, H. L. Robertson, Frances Stetson, Charles Hoxie, R. Hetherinton, Jr.

Third Year—Bertram Knutson, Gerald Best, Robert Miller.

**Dean and Regents of The Crown Willamette Paper School. Left to right, Dean A. G. NATWICK; Regents, ALBERT BANKUS, Vice President Crown Zellerbach Corp.; CLARENCE E. BRUNER, Resident Manager, Crown Willamette Paper Company Division, West Linn, Oregon; and J. E. HANNY, Resident Manager, Crown Willamette Paper Company Division, Camas, Washington.**

SEATTLE PUBLIC LIBRARY



Fourth Year—J. A. Butterick, C. M. Beck, J. W. Holmes, Clifford Parr, Ralph Strickler, Lear L. Smith.

## Awarding Diplomas

Albert Bankus, vice president of the Crown Zellerbach Corporation, before awarding the certificates and diplomas to the third and fourth year men, remarked that the company was glad to support the paper school because of its fine work not only by the students but upon the part of the faculty as well, who, he said, worked without compensation.

## Fourth Year Graduates

• The following students completed the fourth year of the Crown Willamette Paper School and received diplomas:

Harlan Adair, Jack Batzer, Fred H. Blomenkamp, Kenneth A. Branstiter, Roy Brown, Frederick J. Bunnell (WL), James M. Burch, Burr L. Canfield, Edgar A. Clark (WL), E. C. Cooley, E. W. Crisman, Leslie Golladay, Thomas M. Hughes, Ragmar S. Josephson, Gordon C. Kinney, David R. Kline (WL), A. R. Lindsley (WL), John C. Letourneaux, A. J. Lethlean, M. C. Lewis, Carl J. Genz.

William Little (WL), Odie Lytsell (WL), George Nelson, Donald E. Persons, Louis Pierson, John C. Pollard, Burnett Pope (WL), Ralph K. Pratt (WL), S. M. Purdy, Glenn W. Quail, Kenneth A. Renner (WL), Walter Roppell (WL), Harold L. Roley, Harlyn B. Scobba, Carl Sawyer, Elmer D. Simpson, Robert Simpson, L. S. Thompson, Fritz W. Tietz, Herbert Wymore.

## Those Completing the Third Year

• Norval J. Aslin, Willard Boutwell (WL), Robley A. Butler, A. Miles Cady, H. R. Clodfelter (WL), Louis A. Coleman (WL), Clinton A. Dobson, Robert J. Fuller, Carl L. Gehman, M. M. Graham (WL), Wolfe C. Gigler, John Grill, Ellis E. Hoffman, Dale F. Hamilton, Henry B. Jacobsen, Roy W. Keller, Don Fike Knapp, John D. Roberts.

Paul C. Laudien (WL), John A. Liedtke, George Robert Lund, Thomas William Myers, Elbert L. Newkirk, Charles L. Nordstrom, John C. Plankington, Talbert B. Preuit, John A. Repman, Vincent J. Ross, Carl E. Rhorer, Lester F. Russell, Frank D. Sill, Loyd M. Weible, M. C. Wickstrom (WL), John H. Winters, Charles H. Witt, Jr.

## Second Year Students

• L. Averill Adams, Rudolph T. Anderson, George L. Ayers, Earl W. Baker, Everett F. Baker, Wayne Bayless, Louise G. Baxter, Wayne Bea, Elmer H. Beauchamp, John H. Beaver, Jr., Hubert J. Bolger (PCS), Henry E. Burnett, John M. Burnett, Norbert Boyle, Alfred Calhoun, Dougal Callison (WT), Charles B. Clemans, William E. Damon, William B. Dick, Clifford E. Dickie (PH) Frank L. DeTemple, Alvin Doyle, Carroll C. Eckert, Lloyd V. Eiford, Edward F. Evans, Arthur F. Eymer, Donald E. Fifield, Thomas F. Finlayson, Floyd R. Gallagher, George W. Gassaway, Leonard A. Groth, Leo N. Guffnett, Eugene A. Hagen, Nicholas P. Heade (WL), Paul E. Herman, Donald W. Huycke, Herbert H. Hansen, George Winfield Johnson.

Irene Clare Junge, Oscar R. Klee, Wallace L. Kohl, Donald E. Kontz, George A. LaHusen (WL), Ronald E. Lambert, Harry Larsen, James F. Maney (PH), Richard H. Mark, Joe Otterson (WL), Orville R. Osgood, Clarence S. Ostenson, Richard V. Owenson, H. L. Ostenson, Virgil P. Ochs, Alfred Paris, Mitford R. Persyn, Frank J. Piller, Bernt O. Reese, Lewis L. Richardson, Iver J. Rivenes, Harry K. Roberts, Lynn W. Robertson, William Leith Ross, Lester E. Schatz, John H. Schick, Frank Joseph Schmitz (WL), Gene Pershing Shauvin, Carl E. Sherrell, Charles B. Shirley (WL), Glen Wood Smith, Leslie N. Smith (WW), Don Jack Tenney (PH), Roy R. Trutton, Alexander J. Urquhart, John Peter Waitkowicz (WL), Dorothy G. Wilber (PCS) H. Roger Williams.

## First Year Students

• Mary Amicarella (WW), William D. Angell (WW), Jean L. Atkins, Curtis C. Asher, Lee Allan Beaman, Clare M. Beeler, Laurence E. Bedell Joseph J. Boyle, Darlene G. Bowerbank, Charles N. Bradshaw, Joseph Brazney (WL), Thomas R. Bloye (WL), John L. Buchholz, Keith Brown, John W. Carlson, Alfred L. Chasse, Myron E. Champion, George A. Clemans, Gerald Francis Craig, Joseph E. Decker, Thomas F. Dowdy, Elmo F. Eby, Earl Henry Ebaugh, Leslie V. Fleming, Edward P. Franklin, Glenn Edwin Fry (WL), Delmar F. Gehlen, Raymond L. Goff (WT), George Frederick Good, Julius A. Gould, Alfred H. Grande (ZP).

Jack K. Humphreys (WL), Frank P. Humm, Fred Earl Hungate, Paul Hughes Kibbey, Delbert Ivan Knapp, Harold C. Kolb (PH), Robert H. Kolberg, Ivan J. Korsund, Howard J. Kroll, Laurence C. Koplin, Helen Lahdenpera (WW), Cecil L. Lawrence, Dean E. Lindgren, W. E. Laughridge, Willard R. McAtee, Elston L. McAtee, James R. Mace, Raymond J. Mall, Dale Leland Mayfield, Henry S. Miller, Lester E. Miller, Elmo M. Mills, Don W. Morgan, Alton Morris (WL), Ralph A. Mowrey, Robert Moisant, William T. Morgan, J. J. Niedermeyer, William P. O'Donnell, Herbert W. Ohm (WW), John H. Ostenson, Ella L. Owens.

Joan Rose Palmer, Arthur S. Patton (WW), Everett J. Phillips (WW), Rex W. Rodgers, Vernon L. Richardson, G. W. Ronfeldt, Eileen V. Reierson (PH) Willard T. Sampson, Glen C. Scharback (WL), Charles H. Starks, Joseph A. Stewart, Leslie J. Stuhr, Wesley Sperling, Jacob Straub, Basil Taylor, John G. Taylor, E. H. Templeton (WW), Robert Thompson, M. J. Tufford, Harold A. Tuttle, John West Tilden, Harold A. Tiffaney, Arthur T. Williams, Jay L. Wagner, John R. Vedder, Alfred P. Young, Leo Young, Harry A. Young (WW), James D. Zellerbach, Jr.

The divisions represented by the students are indicated by the following abbreviations: West Linn (WL); Western Waxed Paper (WW); Western Transportation (WT); Portland Headquarters (PH); Pacific Coast Supply (PCS); Zellerbach Paper Company (ZP).

## Principal Wins Award

• The principal of the Crown Willamette Paper School, Frederick A. Olmsted, technical supervisor of the Camas mill, received a surprise honor award himself at the March 11th dinner.

Resident manager, J. E. Hanny announced that Mr. Olmsted had been awarded first prize in a nation-wide letter contest conducted by the National Industrial Conference Board for the best letter on "How Can a Foreman Meet the Challenge of All-Out Defense Production?" Mr. Hanny handed the surprised and pleased Mr. Olmsted the $100 check received from the board, saying that this was a signal honor to the Crown Willamette Paper School and to the corporation. Mr. Olmsted's winning letter appeared in the March number on page 9.

## The School Faculty

• The men who supervised the work of the Crown Willamette Paper School through its ninth term, contributing their time and energies without compensation, included:

A. G. Natwick, dean; F. A. Olmsted, principal; Clarence Enghouse of the West Linn mill, vice principal; Roderick M. Crosby, registrar.

G. H. Gallaway, George Bailey, Frederick Sievers, Paul Millard, H. Junge, O. T. Defieux, F. W. Flynn, Gus Ostenson, C. A. Anderson and Reginald Haight.

**Honor students of the fourth year graduating class are wished success by ALBERT BANKUS, Vice President, Crown Zellerbach Corporation, San Francisco. Mr. Bankus is shaking hands with HAROLD L. ROLEY, who received first honors. Left to right from Mr. Roley, HARLYN B. SCOBBA, E. C. COOLEY, RALPH K. PRATT, JOHN C. LETOURNEAU and GEORGE NELSON. Camas Resident Manager, J. E. HANNY, a regent of the Crown Willamette Paper School, is on the right.**

# Sulfite Waste Liquor Disposal

by WILLIAM PITTAM*

SINCE the year 1874, when the Swedish chemist, C. D. Eckman, started the world's first sulfite mill at Bergvik, Sweden, pulp manufacturers have been searching for ways to utilize the spent cooking liquor from the sulfite process. The solids in this liquor represent more than fifty per cent of the oven dry chips charged to the digester, as well as most of the chemicals present in the original liquor. At the present time, this spent liquor is discharged into rivers, or other bodies of water adjacent to the mills. Increasing opposition to this type of disposal by civil authorities and the general public, as well as a desire to recover valuable and useful products from such a large quantity of waste material, has led to a considerable amount of research in recent years upon this problem.

Among the uses developed for dilute or evaporated waste sulfite liquor is that of a source of tanning materials, vanillin, sulfur dyes, acetone and a variety of acids. It has been used as an ingredient of cattle food, as a road binder, and as an adhesive in the manufacture of coal and wood briquets.

Waste liquor contains a considerable quantity of fermentable sugars, which can be converted to ethyl alcohol by the action of yeast, an operation that is attracting some attention in these days of large demands for alcohol.

It must be pointed out, however, that these processes are not the answer to the disposal problem because they are not able to utilize more than a small fraction of the available solids in the waste liquor.

## Claimed Recovery Offers Solution

● The only scheme that promises successful disposal is that of burning the liquor to recover heat. This has been done, but, in a region of low cost fuel such as the Pacific Northwest, is not economically feasible. If a process of combustion was developed, where not only the heat of burning was used, but also the chemicals, used in the original liquor and present in the spent liquor as ligno-sulfonates, were recovered for reuse, then the economics would be favorable and the process would be self supporting. Such a disposal process has been developed recently on a pilot plant scale at the Longview mill of the Pulp Division, Weyerhaeuser Timber Company. It consists of evaporation and combustion of the waste mtaerial, producing power and process steam, and regenerating the chemicals present in the original cooking liquor for recycling.

*Research Department, Weyerhaeuser Timber Co., Longview, Washington. Presented at the 190th Meeting of the Oregon Section, American Chemical Society, Heathman Hotel, Portland, March 14, 1942.

## Cooking and Liquor Collection

● The liquor used to separate the cellulose from the rest of the materials present in wood consists of a dilute solution of the bisulfite of a suitable metal and sulfurous acid. This acid, together with the chips, is heated in a large brick lined vessel called a digester, for a period of nine or ten hours at about 135 degrees C. and 90 pounds pressure. At the end of this time, the charge is allowed to empty into a tank called a blowpit, where the liquor is drained off and the pulp washed preparatory to delivery to the mill for cleaning, purifying and drying.

The choice of a metal base for the bisulfite liquor to be used in the cooking of pulp, whose waste liquor is to be recovered, depends upon its behavior in the furnace and whether or not its ash can be reused.

The bases that are, or can be, used in cooking wood are, ammonium, calcium, magnesium and sodium, of which calcium is the most common, mainly because of its low cost. Of all of these, magnesium is the only one whose sulfate, or organic sulfur derivative, in the presence of organic material, burns to an oxide with the liberation of $SO_2$. Ammonia forms nitrogen compounds, and calcium and sodium form sulfides, or sulfates, none of which are usable in the sulfite process. In addition, pulps cooked with magnesium bisulfite possess equally as good characteristics as pulps cooked with calcium, and for some purposes are even better. Furthermore, the oxide produced in the controlled combustion process forms an easily hydrated ash that is very active in combining with sulfur dioxide. Consideration of all these points resulted in the choice of magnesium oxide as the base in the recovery process.

The liquor used in cooking was prepared by mixing magnesium oxide with water and bubbling sulfur dioxide from the digester relief system through the suspension. As the pilot plant operated, the recovered acid was incorporated in this prepared liquor. Some of the runs were made exclusively with recovered liquor. In this manner, the effect of recycling the recovered liquor could be studied.

The pulp was cooked in the usual manner in the mill digester, except that the contents of the digester were heated by means of a heat exchanger in the circulating line instead of introducing steam directly into the digester. Another variation was that of taking the liquor from the bottom of the digester and pumping it to the top through a circulating system, instead of the reverse, as is usually the practice. The waste liquor drained from the blowpit after the blow, averaged about 9 per cent total solids. Some dilution was unavoidable in the attempt to recover as much spent liquor as possible.

## Evaporation and Burning

● Experiment demonstrated that the optimum furnace conditions were obtained when the liquor furnished to the burner contained from 60 to 65 per cent total solids. When such concentrations were used, the combustion zone reached a temperature of 2000 degrees F, and the resulting ash proved highly satisfactory. Higher concentrations were burned, but there was a tendency for the liquor to char on the burner cup and prevent atomization of the fuel. Liquor of lower solids content was burned, but the lower temperatures encountered resulted in poor operating conditions.

To obtain 65 per cent solids, the liquor from storage was concentrated in three steps. First, it was sprayed countercurrent to the hot furnace gases after they had passed the cyclone that removed the ash. This served the purposes of cooling the hot gases, concentrating the liquor and washing out all carryover from the cyclone. The effluent from this spray tower, containing about 10 per cent solids was pumped to a forced circulation vacuum evaporator, where the concentration of solids was raised to 35 per cent. From the evaporator, this liquor was piped to an atmospheric boiling tank for final reduction of the water content.

From this point on, it was necessary to heat all the pipes conveying liquor to prevent freezing and consequent plugging of the burner lines. The burner, which was of the spinning cup type, received the liquor through a meter by means of a gear pump, and sprayed it into the furnace in a fine mist. The B.T.U. content of this liquor was 7700 per pound of O.D. solids.

The combustion chamber was a brick lined cylinder about five feet in diameter and twenty feet high. It was necessary to preheat the combustion equipment to 1400 degrees F with oil before changing to liquor fuel. Preheated air was supplied by a forced draft fan and directed by means of nozzles at the floor of the furnace to keep ash from collecting and becoming "dead burned" and unreactive.

It was necessary to supply about five pounds of air per pound of dry solids burned for complete combustion at zero excess air. Usually the excess air was kept at 15 per cent to insure that no $H_2S$ was formed. It was found that the lower the excess air, the lower the sulfates in the finished liquor would be.

The products of combustion were sulfur dioxide, magnesium oxide, water and carbon dioxide. Added to this was oxygen from the excess air and nitrogen. When the excess air dropped near to zero per cent, hydrogen sulfide began to form.

### Magnesium Oxide Collection

● The hot gases from the combustion chamber first passed through a fire tube boiler operating at 110 pounds pressure, generating steam for the evaporation. Because the pilot plant was inefficient, as most all experimental equipment is, not enough steam was generated to make the plant independent of the mill supply. However, calculations based on the results obtained show that a mill scale plant will be almost self sufficient.

Exit gases from the boiler were sent through an air preheater, then through an induced draft fan, and finally through a cyclone. Here most of the ash was collected and fed into a tank filled with water by means of a dust valve. From the cyclone, the gases were sent to the tower, already mentioned, then through a small chamber fitted with wooden baffles to remove any entrainment.

Originally, it had been intended to collect the ash in a dry state. However, since the ash was so light and hard to handle, it was decided to feed it into a tank of water which was stirred continually with a large capacity pump. A proportion of the resulting milk of magnesia was "bled off" from the circulating system and sent to the absorption towers. It was found that if the suspension was allowed to retain the sensible heat in the ash, it would thicken and plug all the pipes. A water-cooled jacket around part of the circulating line prevented this.

### Recovery of the Sulfur Dioxide

● The absorption towers for the absorption of the sulfur dioxide were of wood plank construction. They were roughly twenty-four feet high and twenty-six inches square in cross-section. About sixteen feet of their length contained grid packing, consisting of one by four-inch slats on edge, spaced one-half inch apart, each course being placed at right angles to the one immediately above and below it.

The absportion towers were preceded by a spray cooling tower of similar construction except that the slats were placed one inch apart.

All three of the towers were fitted with flat cone spray nozzles above the grids.

The gases passed counter-current to the liquor flowing over the surfaces of the grids at a rate maintained near 25 gallons per minute. The advantage of grid packing in a tower of this type is that it presents a large surface for absorption, but does not have an appreciable pressure drop across the packing.

Water was used as the coolant in the spray cooling tower. It was pumped through a heat exchanger to remove the heat picked up. As the volume of the circulated water continually increased by the amount condensed from the gases, it was allowed to overflow and was used to supply make-up water for the absorption towers.

The absorption towers were operated in a similar manner as the cooling tower, except that recovered liquor was used as the absorbing medium. The mixture pumped to the weak tower contained magnesium hydroxide, sulfite, and bisulfite. The liquor circulated to the strong tower consisted of the same but contained a much greater percentage of bisulfite.

It was necessary to maintain a delicate balance between both towers to insure as high a concentration of $SO_2$ in the liquor from the strong tower and as low a concentration of $SO_2$ in the gas exhausted from the weak tower as possible.

As the towers were operated, about 98 per cent of the sulphur dioxide was removed from a gas containing 0.8 per cent $SO_2$ by volume.

A peculiar fact that appeared in the tower operation was the existence of a reaction time. It was found that a slurry of monosulfite pumped to the tower returned as monosulfite plus sulfurous acid. Upon standing a short time, some of the monosulfite became bisulfite, and the solution, and remaining slurry, were ready for re-cycling.

### Conclusion

● In conclusion, the successful operation of this pilot plant demonstrated the following facts to be true.

1. Magnesium base liquors can be burned to produce enough steam to make the pulp mill almost self sufficient in process steam and in power.
2. The ash remaining after combustion is easily collected and under controlled conditions is highly reactive.
3. The sulfur in the liquor is released as sulfur dioxide and can be absorbed to form new cooking liquor in an absorption tower using a suspension of the ash and water.
4. Recovery of the chemicals from spent liquor and their continued recycling will eliminate the necessity for consumption of large quantities of sulfur and lime rock.
5. Pulp produced with magnesium base cooking liquor is equal in quantity to that made with lime base liquors.
6. The process pays for itself.

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## Members of Wood Pulp Allocation Committee

● On March 30th the formation of the Wood Pulp Allocation Industry Committee was announced by the Bureau of Industry Advisory Committee of the War Production Board. This group will aid the Pulp and Paper Branch in allocating all wood pulp beginning May 1st.

Besides David Graham of the Pulp and Paper Branch as Government Presiding Officer, the membership of the committee includes: G. B. Gibson, Union Bag & Paper Corp., New York; George E. Dyke, Robert Gair Co., Inc., New York; H. O. Nichols, Crown Zellerbach Corp., New York; N. L. Nourse, Brown Company, New York; L. K. Larson, Pulp Division Weyerhaeuser Timber Co., New York; Charles Conrad, Rayonier Incorporated, New York; S. E. Kay, International Paper Co., New York; Rex W. Hovey, Oxford Paper Co., New York.

H. H. Hanson, W. C. Hamilton & Sons, Inc., Miquon, Pa.; Dwight L. Stocker, Michigan Paper Co., Plainwell, Mich.; Douglas Crocker, Crocker, Burbank & Co. Assn.; Amor Hollingsworth, Penobscot Chemical Fibre Co., Boston, Mass.: and, F. W. Brainerd, Scott Paper Co., Chester, Pa.

# Trade Talk

of Those Who Sell Paper in the Western States

## Provincial Paper Tells How To Stretch Paper Supply

● Provincial Paper Company, a Canadian producer of newsprint and book papers, has issued a publication for distribution among printers and advertisers offering a few tips on how to get more value out of less paper.

"At present Canadian paper mills are attempting to meet greatly increased demands for paper and paper products while also diverting quantities of basic paper making chemicals, such as chlorine, to other vital war requirements. Their machinery is working to capacity, 24 hours a day.

"These efforts have not been sufficient to eliminate need to cut down number of colors and finishes in paper. Now an actual shortage and consequent rationing can only be prevented by action by everyone in the printing and allied trades. Paper must be conserved; waste must be eliminated.

"A few of the specific ways in which paper wastage can be reduced, according to Provincial Paper, are:

"(1) Designating booklets and folders to cut evenly from standard size sheets and to avoid waste through faulty printing. Use minimum size of borders.

"(2) Make certain that the proper type of plates and engravings are used for the job to be done and that inks are adapted to the work. Get the assistance of ink company experts rather than experimenting in ways which result in wasted jobs.

"(3) Make certain that the stock used in proving color plates is identical to that on which the job is to be run.

"(4) Leave paper in its package until a job is ready to go to press and pile paper carefully to avoid overhanging edges. Keep stock piles of paper covered and do not let salesmen waste sample sheets.

"(5) Keep printing and bindery equip ment clean and use waste stock to make certain all dust and oil is thoroughly removed.

"These are a few of the ways in which printers and users of paper can cut down wastage. Others will probably occur to many in the trade. Through elimination of waste our supplies of paper can be made to go a lot further."

## Fortune Visits Coast Jobbers

● A. R. Fortune, sales representative of the Rochester Paper Company, Rochester, Michigan, was a Pacific Coast visitor last month.

**O. S. BARRIE, Assistant Western Sales Manager, OXFORD PAPER CO., whose offices are in Chicago, visited BLAKE, MOFFITT & TOWNE branches during April and talked with a large number of printers and publishers, as well as to BM&T sales meetings.**

**Mr. Barrie (center) was photographed while in Seattle conferring with LEO. C. CHAPMAN, Sales Manager (left) and J. W. THOMPSON, Manager (right) of Blake, Moffitt & Towne's Seattle branch.**

**A new Oxford Paper Co. display of materials used in paper making that are vital to the war program was shown to printers and publishers by Mr. Barrie. It also emphasized the large volume of raw materials, 4 to 4½ carloads, required to make 1 car of coated book paper, and resulting problem to paper mills of the recent 6% increase in rail freight rates.**

**Conditions in the printing business are changing rapidly, Mr. Barrie said. Advertising is more realistic today and more educational. Business still exists for the printer but in new forms. One example is dog food. To save cans it is being dehydrated and packed in cartons requiring new labels, new dealer helps, etc.**

## Warns of Cut in Civilian Box Use

● Speaking before the Folding Paper Box Association convention in Chicago on March 27th, William W. Fitzhugh, of the War Production Board, warned the paper board and box industry that a steadily increasing volume of war demands must inevitably curtail the supplies available for civilian users.

Mr. Fitzhugh said that the greatest difficulty of his division of the WPB at present "is the impossibility of ascertaining what the demand for paper packages will be," because of the decentralized buying methods of Government agencies and of companies with war orders.

"As the production schedule accelerates day by day," he continued, "it seems that more and more boxes will have to be made for purposes not now understood, and I consider it inevitable that this demand will be such as to compel the scaling down of civilian uses."

Pointing out that the abnormal demands of war made past statistics valueless as a basis for estimates, Mr. Fitzhugh said:

"The war is not being fought in this country and a vast quantity of articles will have to be sent somewhere else. Many of them have to be packed in some manner—in wooden cases, in fibre drums and in paper boxes."

He said that this department had prepared in the order of essentiality a list of products which now are or may be packed in folding or set-up boxes, but added that there would be no arbitrary lopping off of civilian supplies.

## Zellerbach Bond Buyers Identified By Buttons

● In order to stimulate sales of war bonds, the Zellerbach Paper Company is issuing a button to every employe who signs up for the payroll deduction plan for buying bonds.

The button has a black background and orange letters state: "I'm Buying Bonds Regularly."

The company is hopeful that other firms will follow its lead in thus promoting the sale of bonds.

## Roy Giddings Visits Byron Western Dealers

● Roy Giddings, manager of sales, the Byron Weston Company, Dalton, Mass., makers of fine bonds and ledgers, spent the latter half of March visiting distributors on the Pacific Coast.

Mr. Giddings came first to Spokane and Seattle and then visited Tacoma, Portland, San Francisco and Los Angeles before turning eastward again. Blake, Moffitt & Towne represent Byron Weston in the Pacific Coast states.

## Stop Newsprint Shipments to Australia

● British Columbia's exports of newsprint to Australia have been drastically curtailed in recent weeks as a result of the critical tonnage situation in the Pacific.

The Australian government has suspended shipments of newsprint for the time being because of the greater need for war supplies. Apparently Australian publishers are being compelled to rely to a greater extent on the production of the Derwent Valley mills recently put into production in Tasmania but which have depended to some extent on imported pulp from British Columbia to be used in combination with native pulpwood.

According to Australia's customs minister, R. V. Kease, current newsprint stocks together with its own production should be sufficient to last Australia for two years.

Shipments of newsprint to Australia from Canada have been steadily declining in recent years. In 1940, shipments totalled 164,021 tons, but this amount was reduced sharply last year as Australia put into effect restriction measures to cut down on usage of newsprint.

There has been no action yet to suspend newsprint shipments to New Zealand, India and other markets in the Far East except that all transportation facilities have been critically affected by war conditions. These markets have no production of newsprint of their own and have always looked to Canada, Britain or Sweden for their paper.

## Victor Hecht In Demand As Speaker

● Victor E. Hecht, vice-president of the Zellerbach Paper Company is in great demand as a public speaker. On April 3 he addressed the Fresno Advertising Club; San Diego Advertising Club, April 8; San Francisco Advertising Club, April 16, and on May 19 he will address the San Francisco Craftsmen's Club.

## Zellerbach Employees Serve Soldiers

● The Zellerbach Recreation Club took over San Francisco Hospitality House April 12.

The club served between 1500-2000 servicemen, and all cakes, cookies, and sandwiches were made by the girl members of the club. Miss Marie O'Donnell, San Francisco Division, was chairman of the day.

## Pell Taking Movies Close to Home

● Rodman C. Pell, president of the Pelican Paper Company, San Francisco, finds his avocation of globe trotting and making colored movies of his travels, somewhat hampered by the war.

Nothing daunted, however, Mr. and Mrs. Pell will set out April 1 for a tour of Death Valley. This time they will only be gone a couple of weeks, but will bring back plenty of interesting film.

## Hughes of Strathmore Visits Distributors

● Ed Hughes of the Strathmore Paper Company, Springfield, Mass., was a recent Pacific Coast visitor.

## Bellis Interned In Manila

● A. R. Bellis, well known to the Pacific Coast paper trade, and a member of J. P. Heilbronn & Company, Manila, P. I., has been interned by the Japs, along with hundreds of other Americans.

## Thayer of Carpenter Coast Visitor

● H. A. "Mike" Thayer, territorial vice-president of the Denver, Pueblo and Albuquerque division of the Carter Rice and Carpenter Division of the Carpenter Paper Company, was a recent San Francisco visitor. He was called to the Bay City from his headquarters in Denver by the illness of his mother, who is recovering following an operation.

## Zellerbach Employees Complete First Aid Work

● Fifteen men and women of the headquarters and San Francisco division of the Zellerbach Paper Company, were graduated from a Red Cross First Aid class.

The class completed 20 hours of standard work, and 10 hours of advanced training.

## BM&T Issue New Folder

● An interesting new mailing piece is being mailed to the printing trade by Blake, Moffitt & Towne.

It is a pop-up folder, printed on Strathmore Cover, Substance 50. The folder asks the questions: "When Can I Get Paper Deliveries? Why Is There a Paper Shortage? What Can Be Done?" With a defense cut on the back, the folder shows how paper is being used in colossal quantities by our war effort.

Another mailing piece going to the purchasers of paper towels is an envelope containing gummed stickers. These stickers are to be stuck up in wash rooms and urge the conservation of paper towels.

## Marian Crapper Heads Credit Union League

● Miss Marian Crapper, secretary to E. A. Breyman, vice-president of the Zellerbach Paper Company, is present president of the San Francisco Chapter of the California Credit Union League. Miss Crapper is the first woman so honored.

Not only is Miss Crapper active in credit union affairs but she is also doing her part in our war effort. She is secretary of the Executive Secretary's Club of San Francisco, and will be chairman of the day when that organization entertains 1500 service men at San Francisco's Hospitality House.

## McComb of Zellerbach Paper Married

● John McComb, warehouse and stores superintendent, Zellerbach Paper Company, and Miss Jerry Widner, also of San Francisco, were recently married.

## Zellerbach Accountant Joins FBI

● Robert G. Barthol of the headquarters accounting department, Zellerbach Paper Company, has joined the FBI in Washington.

## Graham Paper Men Visit St. Helens Mill

● Harry W. Henry, president and Gordon Kerwin, executive vice president, Graham Paper Company, St. Louis, Missouri, were entertained by St. Helens Pulp and Paper Company on April 5th, 6th and 7th, as were all the coast salesmen of the paper company, including C. E. Swick, manager of the San Francisco, California, office.

The Graham Paper Company is the sole selling agent for St. Helens Pulp and Paper Company.

## Thompkins, Veteran Salesman, Dies In San Francisco

● Friends of E. G. Thompkins, veteran San Francisco paper salesman, will be grieved to learn of his death. He had represented Bonestell & Company at the time of his passing. He leaves a wife and seven children.

## Dick Prager Promoted, Assigned to Oakland

● Richard "Dick" Prager, who has been in the Headquarters Resale department of the Zellerbach Paper Company, has been made manager of the new stationery department of the Oakland Division.

## Envelope Men Visit Coast Offices

● W. A. Swift, president, and E. B. Johnson, vice-president, Pacific Coast Envelope Co., Division, paid a visit to the San Francisco and Los Angeles offices of the concern, from their headquarters at Springfield, Massachusetts.

## Zellerbach Managers Meet In San Francisco

● The Thirty-Sixth managers meeting of the Zellerbach Paper Company was held in San Francisco April 13-14.

All division managers of the company attended the event, which was advanced one month earlier than usual to discuss current problems.

## "First Aid" Colton

● Milton Colton, San Francisco Division, Zellerbach Paper Company, is busy with so many war effort activities that the boys around the office are calling him "First Aid" Colton.

Mrs. Colton is also active in our war effort. She is a member of the Grey Ladies of the Red Cross and looks very trim in her uniform.

## Arthur Towne Named Head Of Trade Committee

● Arthur W. Towne, northern California manager of Blake, Moffitt & Towne, has been named chairman of the 1942 domestic trade committee of the San Francisco Chamber of Commerce.

Mr. Towne is also a member of the San Francisco chamber's board of directors and has been active for years in local civic affairs. Selection was made by Dwight L. Merriman, president of the chamber.

Thirty-five men, representing numerous phases of San Francisco trade, compose the new committee.

# Heat Transfer Characteristics Of Indirect Heating For Sulphite Digesters

by F. W. FLYNN*

THE need for a wider knowledge of the heat transfer characteristics of indirect-heated digesters becomes evident with the increased use of heaters in the Industry. To be of any value the data must necessarily cover a wide range of plant operating conditions and heater conditions. The object of this paper is to point the way to further work, so that the knowledge of the heat transfer characteristics of indirect heaters will be enlarged. Tests have been made at Camas on an indirect-heated circulating system installed on a 13.8-ton capacity sulphite digester. As it was necessary to maintain production schedules, no great changes could be made in operating conditions, but an attempt was made to study tube scaling or fouling conditions.

A survey of the literature reveals no data on actual plant size heaters. Some experimental work on a small indirect-heated system has been reported by Caulfield and Jenness, but this was on kraft pulping (1).

It is not the intention of this paper to cover the merits of digester circulation, with or without indirect heating, but only to present the information that may be of some value to anyone anticipating the installation of external liquor heaters or in checking the heaters that may now be in operation.

The purpose of the paper is to show the thermodynamical method of measuring and calculating the amount of work a heater is doing throughout the heating period so that other tests may be made and compared on the same basis.

Interpretation of results from such tests may, in some cases, expose conditions that are undesirable and which are not brought out with the common heater instruments. Also, the data collected is use ful in the design of new heat interchangers, as in the past, heater design has been based largely on theoretical calculations supplemented by experience from other installations.

The three most important measurements taken in the tests were:

(1) Rate of circulation.
(2) Temperature of liquor entering and leaving heater.
(3) Steam pressure in heater shell for steam temperature outside heater tubes.

The rate of circulation can be measured in either of two ways: One, by installing an orifice type flow meter in the liquor line, the other by measuring the circulating pump differential. The first method, using a recording type of flow meter is to be preferred and was used in the tests reported, but the second method is reasonably satisfactory if the other equipment is not available. When measuring the flow from the circulating pump differential, pressure type gauges are installed on the suction and discharge side of the pump and the pump differential thus obtained, in conjunction with characteristic curves for the pump, will give the gallons per minute flow of the circulating liquor.

The liquor temperature entering and leaving the heater was measured in thermometer wells in the respective pipes. In this test, special thin walled, thermometer pockets were placed in the heater inlet and outlet pipes at such distances from the heater as to minimize the effect of any heat lag due to the large mass of heater casting. The thermometer wells in the heater itself were not used for this reason. The thermometer pockets were filled with a heavy lubricating oil and glass thermometers inserted. As near simultaneous readings of the temperature as possible were taken so as to obtain an accurate measurement of the temperature rise through the heater.

The heater shell pressure was measured by a pressure gauge. These pressure readings, when converted to saturated steam, give a measure of the temperature on the outside of the heater tubes.

In these particular tests, superheated steam, in the main steam line, was desuperheated before entering the heater so it was necessary to check the heater steam temperature with a glass thermometer. A thermometer well and a pressure gauge connection were installed in the steam line, the thermometer well filled with extra heavy lubricating oil, and a glass thermometer inserted, also a suitable pressure gauge for pressure readings. This equipment was used only as a check on the desuperheater, the actual steam temperatures being calculated from the pressure readings on the heater shell.

Care was taken that the heater was not air bound at the beginning of the test period and also that the condensate was getting away from the heater throughout the test period. If either of these conditions occur very erroneous figures will result.

Two other measurements which are necessary for the calculation of heat transfer characteristics are the specific heat and specific gravity of the liquor. These mesaurements were not made because of their variable nature during the heating period, so an average figure during that part of cooking cycle (for specific heat 0.9, and for specific gravity 1.04) was used in all calculations.

The orifice type flow meter used in this work was a Foxboro. The differential mercury columns were protected from the corrosive action of the cooking liquor by oil chambers placed in the lines between the orifice and the columns. A 6¼-inch orifice plate was used in a 7$\frac{1}{8}$-inch line.

The thermometers used were of sufficient length so that the temperature would be read accurately to one-half degree. The thermometer wells were not insulated as they extended well within the flowing liquor, but care was taken to protect the exposed stem from external air currents and the thermometers were read to obtain as near simultaneous readings as possible. The pressure gauges used in the test were checked carefully on a dead weight tester. Corrections were made for differences in elevation of gauges when installed in lines carrying liquor or where condensate might result in a static pressure on the gauge.

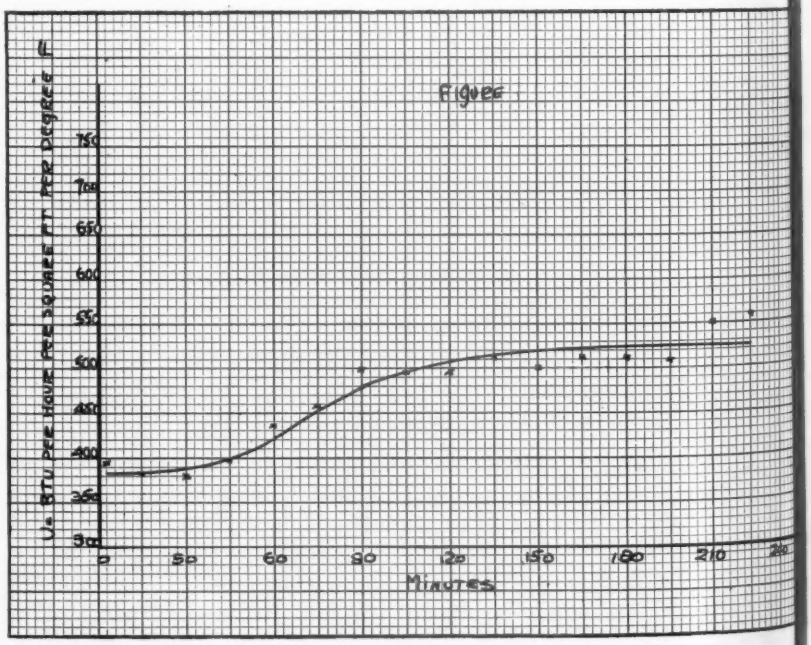



Figure 1

*Chemical Engineer, Technical Department, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington. Presented at the dinner meeting held by the Pacific Section of TAPPI in Port Angeles, Washington, April 7, 1942, in competition for the Shibley Award.

## Table I

| | Time Minutes | Inlet $t_1$ | Outlet $t_2$ | Diff. $t_2-t_1$ | Heater Shell Press | Heater Shell Temp. | Rate of Flow g.p.m. | $\Delta t$ | U |
|---|---|---|---|---|---|---|---|---|---|
| | 0 | | | | | | 1760 | | |
| | 5 | 84.5 | 106 | 21.5 | 0 | 212 | 1760 | 117 | 391 |
| | 15 | 88 | 109 | 21 | 1 | 215 | 1750 | 117 | 381 |
| | 30 | 104 | 125 | 21 | 7 | 232 | 1755 | 117 | 379 |
| | 45 | 118.5 | 139 | 20.5 | 10 | 239 | 1760 | 110 | 396 |
| | 60 | 132.5 | 152.5 | 20 | 11 | 241 | 1760 | 98 | 432 |
| 1 Hr. | 15 | 145 | 164 | 19 | 11.5 | 243 | 1760 | 89 | 456 |
| | 30 | 155.5 | 175 | 19.5 | 14.5 | 249 | 1760 | 84 | 496 |
| | 45 | 168 | 187 | 19 | 20.5 | 260 | 1765 | 83 | 492 |
| | 60 | 180.5 | 199.5 | 19 | 29.5 | 273 | 1785 | 83 | 496 |
| 2 Hr. | 15 | 191 | 210 | 19 | 35 | 281 | 1785 | 81 | 510 |
| | 30 | 202.5 | 221 | 18.5 | 43.5 | 291 | 1785 | 80 | 497 |
| | 45 | 215 | 234 | 19 | 57 | 305 | 1785 | 80 | 510 |
| | 60 | 225 | 244 | 19 | 67 | 314 | 1760 | 80 | 510 |
| 3 Hr. | 15 | 237 | 255.5 | 18.5 | 80 | 324 | 1760 | 78 | 509 |
| | 30 | 248 | 266 | 18 | 84 | 327 | 1760 | 70 | 550 |
| | 45 | 258 | 277 | 19 | 96 | 335 | 1750 | 68 | 561 |

Heater Description:
(1) 114 tubes
(2) 1⅛" od, 15-gauge stainless steel tube
(3) 11' 6" tube length
(4) Two pass heater
(5) Tube area, 386 sq. ft.
(6) Tubes clean
(7) Liquor velocity through heater, 11.87' per second

Digester Capacity ..... 13.8 tons A.D. Pulp
Liquor to Digester ..... 27,000 gallons
Steam Flow to Heater ..... 65,950 lbs.

In the calculation of results from the data collected a simplification of the equation (II)

$$\frac{q}{\Theta}=UA\Delta t_{ave} \quad \text{may be used.} \quad (I)$$

where U=overall coefficient of heat transfer
q=BTU transferred
Θ=Time, hours
A=Area of heating surface, square feet
$\Delta t_{ave}$=Logarithmetic average temperature difference (LMTD)

The simplification being that the arithmetic mean temperature difference (AMTD) was substituted for the logarithmetic mean temperature difference (LMTD).

In equation I the temperature difference $t_{ave}$ in a tubular heat exchanger should be calculated as the logarithmetic mean—

$$\Delta t_{ave} \text{ or } LMTD=\frac{(T-t_1)-(T-t_2)}{2.3 \log. \frac{(T-t_1)}{(T-t_2)}}$$

where T=steam temperature
$t_1$=temperature of liquor entering heater
$t_2$=temperature of liquor leaving heater

For quick and simplified calculations, the arithmetic mean temperature difference was used:

$$AMTD=T-\frac{(t_2+t_1)}{2}$$

This introduces a slight error as the LMTD is always slightly less than the AMTD; however, the difference between the two means decreases as the relative difference between $(T-t_1)$ and $(T-t_2)$ becomes smaller. The error in the results as reported will be less than 4 per cent, and since this is well within the range of accuracy of readings the AMTD was used.

Rewriting Equation I as

$$\frac{q}{\Theta}=W\,C\,(t_2-t_1)$$

where W=weight of material heated per hour
C=specific heat of material

THEN $$W\,C\,(t_2-t_1)=UA\left(T-\frac{(t_2+t_1)}{2}\right)$$

and $$U=\frac{W\,C\,(t_2-t_1)}{A\left(T-\frac{(t_2+t_1)}{2}\right)} \quad (II)$$

Since W=(rate of circulation, GPM) × (Θ) × (Density of water) × (specific gravity of liquor)

and letting F=rate of circulation in G.P.M.
Θ=60 minutes
8.33=Density of Water
1.04=Specific gravity of liquor

THEN $W=(F)\,(60)\,(8.33)\,(1.04)$
and as C was assumed as 0.9, equation 2 can then be rewritten

$$U=\frac{(F)\,(1.04)\,(8.33)\,(60)\,(0.9)\,(t_2-t_1)}{(A)\,(AMTD)}$$

or $$U=\frac{(467)\,(F)\,(t_2-t_1)}{A\left(T-\frac{(t_2+t_1)}{2}\right)}$$

From the above equation, it is apparent that if the composition of the liquor were to remain the same, U is dependent upon four things only which must be measured to complete a set of calculations:

1. Rate of flow through heater

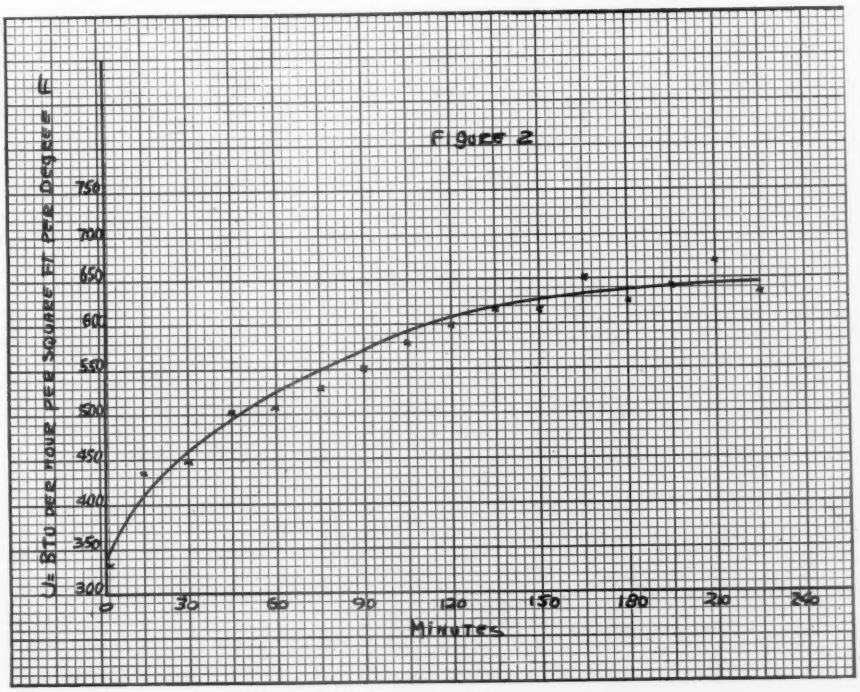



Figure 2

## Table II

| Time Minutes | Inlet $t_1$ | Outlet $t_2$ | Diff. $t_2-t_1$ | Heater Shell Press | Heater Shell Temp. | Rate of Flow g.p.m. | $\Delta t$ | U |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | 1260 | | |
| 5 | 88 | 111 | 23 | 19.5 | 258 | 1260 | 158 | 332 |
| 15 | 89.5 | 118 | 28.5 | 21 | 260 | 1310 | 157 | 433 |
| 30 | 103.5 | 131.5 | 28 | 23.5 | 266 | 1310 | 149 | 447 |
| 45 | 118 | 146.5 | 28.5 | 25.5 | 267 | 1310 | 135 | 501 |
| 60 | 133 | 159.5 | 26.5 | 27.5 | 270 | 1300 | 124 | 505 |
| 15 | 145 | 171.5 | 26.5 | 33.5 | 279 | 1300 | 120 | 523 |
| 30 | 157 | 182.5 | 25.5 | 34.5 | 280 | 1300 | 110 | 550 |
| 45 | 169.5 | 194 | 24.5 | 36 | 282 | 1320 | 100 | 580 |
| 60 | 181 | 206 | 25 | 46.5 | 294 | 1320 | 100 | 598 |
| 15 | 192.5 | 216 | 23.5 | 50.5 | 298 | 1355 | 94 | 615 |
| 30 | 204.5 | 228 | 23.5 | 63 | 310 | 1355 | 94 | 615 |
| 45 | 216 | 240 | 24 | 73 | 318 | 1355 | 91 | 650 |
| 60 | 227 | 250.5 | 23 | 90 | 331 | 1355 | 92 | 623 |
| 15 | 239 | 261 | 22 | 94 | 334 | 1345 | 84 | 640 |
| 30 | 250 | 272 | 22 | 106 | 342 | 1335 | 80 | 667 |
| 45 | 261 | 280.5 | 19.5 | 106 | 342 | 1285 | 72 | 633 |

Heater Description—same as Table I except—

(1) Tube Area 257 Sq. Ft. due to 38 plugged tubes
(2) Liquor velocity through heater 13.6 ft. per second

Digester Capacity ..... 13.8 tons A.D. Pulp
Liquor to Digester ..... 27,000 gallons
Steam Flow to Heater ..... 67,800 lbs.

2. Liquor temperature entering and leaving heater
3. Square feet of heating surface in heater
4. Saturated steam temperature in heater shell

A Plot of U, plus determined, against time will then give a picture of the heat transfer during the heating process. For any one set of operating conditions and with a clean heater, this curve should be nearly the same from one cook to another. The formation of scale in the tubes, however, or the actual plugging of the tubes will cause a gradual change of U. Scale formation is the principal cause for a decrease in heat transfer, but failure to properly remove condensate, or air binding of the heater will influence heat transfer and at the same time probably influence the rate of scale formation. The removal of condensate, which is usually accomplished by a float operated valve, should be as complete as possible without allowing live steam to blow through the relief valve. If the condensate is not removed, there is a loss in heating surface which will result in higher steam temperatures if the digesters are to come off on schedule. Air binding of the heater may take place, after the steam has been shut off, if the condensate relief valve leaks enough to allow air to be drawn back from the hotwell. This condition, although not as serious as poor condenstate removal, will affect the heat transfer.

The range of U, as determined under optimum heater conditions, that is, with clean tubes, ranged from 350 to 550. If the tubes become fouled with scale or plugged in the range of U will necessarily be widened.

Two typical curves of heat transfer, plotted against time, for one set of operating conditions, appear in Fig. 1 and Fig. 2. Figure 1 shows the curve when the tubes are all clean and open. Figure 2 shows the result when part of the tube bundle was blocked off, this is the condition that will occur if the tubes are not cleaned at regular intervals or some condition prevails in the liquor that allows scale to form. It has been our particular experience that the tendency in the sulphite acid heaters is for plugging of individual tubes, with a calcium sulphate scale, rather than a uniform scale throughout the whole tube bundle. In the test shown in Figure 2, 38 tubes, 19 in each pass were plugged, the other being clean, so that a study of an adverse condition and the effect of velocity was observed.

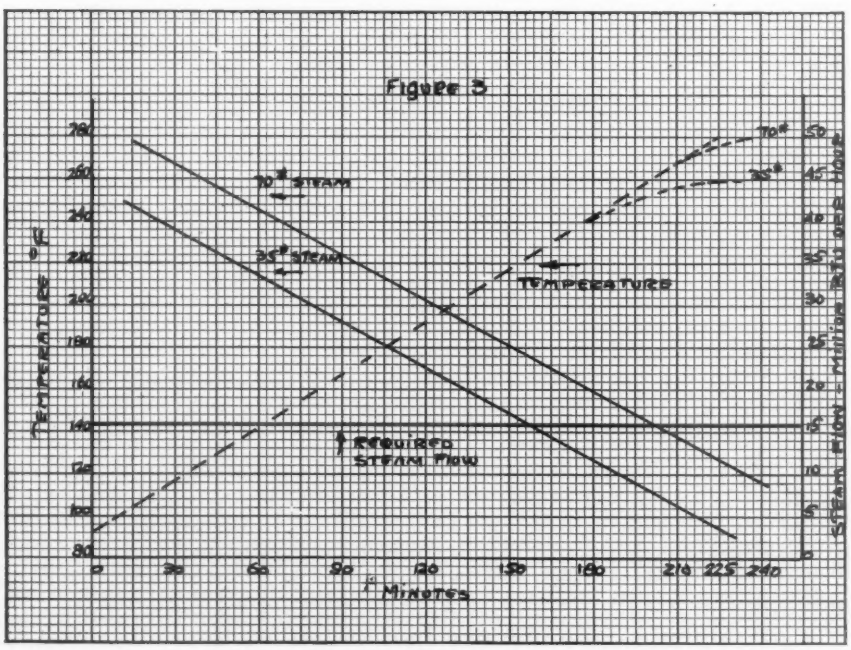



Figure 3

The difference in the shape of the curves is readily noticeable and will bear further explanation. The higher U in figure 2 most likely resulted from the higher velocity that occured when ⅛ of the heater tubes were blocked off. The liquor velocity in the test shown in Figure 1 was 11.87 ft. per second, while that in Figure 2 was 13.6 ft. per second. Another noticeable difference is the shape of the two curves during the first ninety minutes. As this is the time during which the digester is being brought to pressure, it would seem that there is a tendency for the $SO_2$ gas in the acid, due to the temperature rise, to form a film in the heater tubes. As the pressure increases, the $SO_2$ gas has less chance to come out of solution and the U rises with this pressure rise. After the digester is at pressure the curve is more flat. In Figure 2 the curve raised rapidly and a possible explanation of this is that due to the higher liquor velocity the $SO_2$ gas does not get the opportunity of clinging along the walls of the tubes as the flow is rapid enough to sweep away this gas film. This particular point is worthy of more study in that it no doubt will bear a close relationship to scale formation.

On the basis of these results, which are shown tabulated in Table I and Table II, the amount of heat input to the digester can be figured from Equation 1.

$$\frac{q}{\Theta} = UA\Delta t_{ave}$$

or $$q = \Theta \times U \times A \times \Delta t_{ave}$$

From Table I $\Theta = 3.75$

$U=472$
$\Delta t_{ave}=87$
$A=386$
and $q=60\times10^6$ BTU

From Table II $\Theta=3.75$
$U=557$
$\Delta t_{ave}=107$
$A=257$ sq. ft.
and $q=57.5\times10^6$ BTU

A check on the above results is possible by theoretically calculating the amount of heat necessary to raise the digester and its contents to the cooking temperature. The results are shown in Tables III and IV. As can be seen the theoretical heat input checks quite well with the input calculated using Equation 1.

Further check was possible by calculating the heat input from the flow meter chart. These figures check well, as the heat value in the steam corresponding to that figured in Table I was 60,600,000 BTU, and in Table II 61,300,000 BTU. These were the actual steam usage figures in these particular tests.

The use of these figures for heater design can be of value, since if the cooking conditions—such as the cooking temperature curve, digester capacity, wood qualities and amount of cooking liquor are known, then the total heat requirement of the digester can be calculated. By selecting the proper U and proper steam conditions, the heater size can then be estimated.

It might be well to illustrate the use of the heat transfer coefficient with an example. For the purpose of simplification consider a mill having the same capacity digesters as given in Table IV and cooking on the same temperature curve as given in Table II, but instead of the 150 lb. steam used to produce the results in Table II, it is desired to use 70 lbs. or 35 lbs. saturated steam. A plot of the temperature curve required is shown in Fig. 3; also the required BTUs per hour required to give this temperature curve. It will be necessary then for the heater to supply this minimum amount of heat to the digester at all times during the heating cycle. Now assuming the heater to have 450 sq. ft. of heating surface and using a U of 450, a number of calculations can be made to determine whether or not a heater of this size will be large enough to raise the temperature in the required time.

During the first hour the temperature is raised from 88 deg. F. to 142 deg. F. Then solving Equation 1—

$$\frac{q}{\Theta}=UA\Delta t$$

when $U=450$
$A=450$
$\Theta=1$
$\Delta t=T-\frac{(t_1+t_2)}{2}$

$\Delta t$ for 70 lb. steam $=316-\frac{(88+142)}{2}=201$

$\Delta t$ for 35 lb. steam $=280.6-\frac{(88+142)}{2}=165.6$

then $q=1\times450\times450\times201=$ 40,500,000 for 70 lbs. steam
$q=1\times450\times450\times165.6=$ 33,500,000 for 35 lbs. steam

FOR THE SECOND HOUR—
$\Delta t=149$ for 70 lb. steam
$\Delta t=113.6$ for 35 lb. steam
$q=30.2\times10^6$ for 70 lb. steam
$q=23\times10^6$ for 35 lb. steam

FOR THE THIRD HOUR—
$\Delta t=98.5$ for 70 lb. steam
$\Delta t=63.5$ for 35 lb. steam
$q=19.9\times10^6$ for 70 lb. steam
$q=12.8\times10^6$ for 35 lb. steam

FOR THE FOURTH HOUR—
$\Delta t=54.3$ for 70 lb. steam
$\Delta t=18.8$ for 35 lb. steam
$q=11\times10^6$ for 70 lb. steam
$q=3.8\times10^6$ for 35 lb. steam

These points are plotted in Fig. 3 and as will be noted during the first part of the heating, this heater is sufficiently large to transfer the necessary heat, but toward the end of the heating period neither steam pressure would give sufficient temperature to get the digester off on time.

The plot of the actual temperature curve that would result is shown for these two steam pressures at the upper right corner of Figure 3; and it can be seen at the end of 225 minutes, the temperature of the digester if heated with 35 lb. steam would be 258 deg.—and with 70 lb. steam 277 deg. F. By increasing the heating surface, the 70 lb. steam could be used, but it appears that the 35 lb. steam could be used only during the first part of the heating process.

From the information gathered during this study of heat transfer characteristics of indirect heated digesters, the following conclusions can be shown:

As could be expected the heat transfer was increased as the velocity of the liquor through the tubes was increased. However, during the first part of the cooking cycle, that period before reaching the cooking pressure, the heat transfer increases much more rapidly at the higher velocities.

In the ranges studied, velocity did not have any measurable effect on the rate of scale formation.

The information collected from such tests can be used with confidence in the design of new heaters or for the improvement of existing heaters.

To J. M. Wilcox, engineer, Electric Steel Foundry Co., Portland, appreciation is expressed for his valuable assistance in the preparation of this paper.

## References

I. Caulfield J. G. L. and Jenness L. C. Heat Transfer Characteristics of an Indirect-Heat Digester—Paper Trade J. 111, No. 20: 30-32 (November 14, 1940).

II. Badger and McCabe, p. 136, New York, McGraw Hill, 1931.

## Powell River Tester Killed In Action

● Francis H. McMullin, Sgt. Observer in the Royal Canadian Air Force, was killed in active service overseas a short time ago, according to word received by his father Colonel J. H. McMullin, retired commissioner of British Columbia Police, who lives in Victoria.

A graduate of the University of British Columbia, Sgt. Observer McMullin was employed as a pulp tester by the Powell River Company at the time of his enlistment in the RCAF in January, 1941. He received his observer's wings at Brandon, Ontario, and went overseas late last year. He was exalted ruler of the Elks in Powell River when he enlisted.

### Table III

| | | |
|---|---|---|
| Digester Temperature—Start of Test | | 84.5 deg. F. |
| Digester Temperature—End of Test | | 277 deg. F. |
| Digester Temperature—Rise | | 192.5 deg. F. |
| Digester yields 13.8 tons air dry pulp = 25,400 lbs. bone dry pulp | | |
| Wood Yield—46%; Moisture in Wood—48% | | |
| 25,400/.46 = 55,200 lbs. bone dry chips | | |
| 55,200 × 48/52 = 51,000 lbs. moisture | | |
| Liquor Charge = 27,000 gallons at 1.04 specific gravity = 234,000 pounds | | |
| Specific Heat of Wood—0.33; Specific Heat of Liquor—0.9 | | |
| HEAT INPUT: | | |
| Wood | $55,200\times193\times0.33=$ | 3,520,000 BTU |
| Moisture | $51,000\times193=$ | 9,850,000 BTU |
| Liquor | $234,000\times193\times0.9=$ | 40,600,000 BTU |
| | | 53,970,000 BTU |
| Assuming 10 per cent heat loss by radiation and relief | | 5,390,000 BTU |
| TOTAL HEAT | | 59,360,000 BTU |

### Table IV

| | | |
|---|---|---|
| Digester Temperature—Start of Test | | 88 deg. F. |
| Digester Temperature—End of Test | | 280.5 deg. F. |
| Digester Temperature—Rise | | 192.5 deg. F. |
| Digester Yields 13.8 tons air dry pulp = 25,400 lbs. bone dry pulp | | |
| Wood Yield—46%; Moisture in Wood—48% | | |
| Bone Dry Chips = 25,400/.46 = 55,200 lbs. | | |
| Moisture = 55,200 × 48/52 = 51,000 lbs. | | |
| Liquor Charge = 27,000 gallons at 1.04 specific gravity = 234,000 pounds | | |
| Specific Heat of Wood—0.33; Specific Heat of Liquor—0.9 | | |
| HEAT INPUT: | | |
| Wood | $55,200\times0.33\times192.5=$ | 3,500,000 BTU |
| Moisture | $51,000\times192.5=$ | 9,820,000 BTU |
| Liquor | $234,000\times192.5\times0.9=$ | 40,500,000 BTU |
| | | 53,820,000 BTU |
| Assuming 10 per cent heat loss by radiation and in relief | | 5,380,000 BTU |
| TOTAL HEAT | | 59,200,000 BTU |

# Fuel Oil Major British Columbia Problem

● British Columbia's pulp and paper industry will probably be severely affected by Canada's fuel oil rationing program, and during the coming few months every mill on the coast will be required to effect every possible measure of conservation.

The position is that, as a result of tanker losses, the increasing requirements of the war effort and enemy occupation of sources in the Southwest Pacific, Canada has been forced to cut down drastically in consumption of all petroleum products. Gasoline rationing went into effect April 1st, and on June 1st fuel oil is to be rationed in British Columbia with deliveries cut off to all commercial buildings, institutions, schools, hotels and apartment houses.

The fact that Canada imports 50 per cent of its oil by tanker and British Columbia almost 100 per cent has underscored the necessity for conservation.

Under the present wartime program first call on available supplies of oil in British Columbia is from the navy and merchant marine. Then follow the various branches of the fighting forces, shipyards, aircraft factories and other plants engaged in essential war work. The railroads are also in a high category.

A survey is now being made by the Oil Control Board to determine whether an additional 165 commercial and industrial plants can convert their heating and power systems from oil to coal or some other fuel. The pulp and paper mills are being given serious consideration because they consume some 20,000,000 gallons of fuel oil annually at a cost of some $1,000,000. They represent the biggest single industrial group consuming fuel oil.

British Columbia mills have already made considerable progress in curtailing consumption of fuel oil by substituting hogged fuel, and Powell River Company, largest newsprint producer on the coast, uses about 80 per cent hogged fuel in its furnaces. However, mill executives state that to use hogged fuel entirely would be extremely difficult if not impossible because of the wide variation in the head of steam required and the ease with which this is regulated by the use of oil.

Pacific Mills, Ltd., at Ocean Falls is understood to use 100 per cent oil, but British Columbia Pulp & Paper Company's two mills use a fairly large proportion of hogged fuel. None use coal, which is the logical replacement for metropolitan commercial users of oil. Transportation of coal might impose insurmountable difficulties for the mills.

Some mill operators point out that the supply of hogged fuel in British Columbia is limited by the fact that large quantities of this material is exported to the United States, principally from Vancouver Island, but in justification of that movement it is explained that there is an arrangement evolved through the Foreign Exchange Control Board whereby a certain amount of B. C. hogged fuel is exported in return for various chemicals required by the pulp industry and obtainable only in the United States. It is also claimed that some of the B. C. hogged fuel is shipped from points that could not ship on an economic basis to British Columbia consuming mills.

The whole situation is a complicated one and officials of the Oil Control Board emphasize that there is no intention to order an arbitrary reduction in fuel oil until such time as it has been clearly established that the pulp and paper mills can continue operation with some other fuel without loss of production, inasmuch as pulp and paper mills are regarded among Canada's most important phases of industrial activity.

## Wemple Visiting Coast Sulphite Mills

● Holland R. Wemple, sales manager of the Texas Gulf Sulphur Company, New York City, arrived in San Francisco April 9th for a visit with sulphite operators on the Pacific Coast.

Traveling north Mr. Wemple was met in Portland by John M. Fulton, manager of the Pacific Coast Supply Company, Texas Gulf representatives. Together they called upon a number of the sulphite pulp mills.

## New Cafeteria At Longview Fibre

● Longview Fibre Company, Longview, Washington, has recently completed a new cafeteria at the plant for the convenience of the employees, guests and townsmen. This is a modern eating establishment equipped with 16 booths and eight tables, electric range, asphalt tile floor and window blinds which will effectively black out the inside lights. A cook and four waitresses are employed in the cafeteria, which is owned and equipped by the company and rented to Arthur Nelson, who manages this eating establishment.

## Barkers Father and Son Enlist In Canadian Army

● It was a case of father and son entering war service when Fred C. Barker, for many years an employee of the Fibreboard Products Inc. mill at Port Angeles, Wash., entered the Canadian Medical Corps last month.

For with Barker went his son, George (Bud) Barker, into the same branch. They reported for duty at Victoria, B. C. The son does not expect to remain long in the Medical Corps, hoping to transfer shortly into the Royal Canadian Air Force for training as a pilot-observer.

History was repeated when the father and son enlisted, as the elder Barker and his father also went to war together in 1916, serving overseas four years with the Canadian forces.

Fred Barker was first aid chairman for the Clallam County Red Cross chapter at Port Angeles for the last five years. Nearly a thousand persons received first aid training in the last year, alone, Barker himself teaching several score.

The Red Cross paid tribute to Mr. and Mrs. Barker at a luncheon prior to their departure for Victoria, B. C. Harold Fretz, chief chemist of Port Angeles division of Rayonier Incorporated, and chairman of the Red Cross chapter, heartily praised the work done by both in the cause of first aid and safety.

Succeeding Barker as first aid chairman is a committee of three men, two of whom are in the pulp and paper industry—Cyril Edmisten, of Washington Pulp and Paper division of Crown Zellerbach Corporation, and Hans Culland, of the Port Angeles division of Rayonier Incorporated.

## Vic Gault In San Francisco For Several Months

● V. C. Gault, personnel supervisor, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, is spending about three months in the personnel department of the company's San Francisco offices. He left Camas on April 4th.

# Marcus Baruh Dies in San Francisco

● The Pacific Coast business world lost one of its best loved members with the passing April 6, in San Francisco of Marcus "Mickey" Baruh.

Mr. Baruh was born in Nevada City, California, on February 11, 1866, the son of Theresa Woolf Baruh and Aaron Baruh. At the time of his death he was president of the Englander Drayage Company; president and director of the California Cotton Mills; vice-president and director, National Automotive Fibres, Inc.; director, Crown Zellerbach Corporation; director, Zellerbach Paper Company; and vice-president of the Draymen's Asciation.

He was a charter member and past president of Hydraulic Parlor, Native Sons of the Golden West (52 years a member); a member of the Concordia-Argonaut Club; the Beresford Country Club; and the San Francisco Commercial Club.

For more than 45 years Mr. Baruh was a close associate of the late I. Zellerbach, and it was said of him at his passing that he had never been known to refuse a request for aid, or a donation, regardless of the color, race or creed of the person making the request.

He is survived by a brother, J. Y. Baruh, Los Angeles, and a sister, Mrs. Isadore Zellerbach, San Francisco.

## St. Regis Producing Much War Material

● At the annual meeting of the stockholders of the St. Regis Paper Company in Watertown, N. Y., on April 10th, Roy K. Ferguson, president, outlined the important part the company is playing in the War Program through enlisting its full resources in the manufacture of products essential to the armed forces or to important civilian use. Among the products the company is manufacturing for the War Program are parts for guns, tanks, bomb sights, diesel engines and cartridge machines.

In the Plastics Division, war production involves the following items: aeronautical flooring for bombers and flying boats, baffles and valve pushrod housings for air-cooled motors for planes and tanks, fuselage doors and fuselage skin sections for planes, stowage boxes for use in bomber and transport planes, navigator table drawers, propeller parts, and many other products which are in process of development to replace items previously made from critical materials.

The multiwall paper bag factories of the company are operating at a high rate of capacity to supply the increased demands for bags to take care of food products and agricultural commodities previously shipped in burlap bags which today are virtually eliminated by reason of the war in the Pacific. The Army, Navy and Marine Corps are demanding large quantities of multiwall paper bags for shipments of cement and other construction materials to bases both within and without the borders of the United States as well as to carry sugar, flour, salt, rice and other food products to the A.E.F. in Ireland, Australia, Iceland and wherever our armed forces may be sent.

The groundwood mills in northern New Yrok are engaged in manufacturing substantial tonnages of paper for the War Department, Navy Department, Government Printing Office, Treasury Procurement Office and other agencies responsible for obtaining war materials besides supplying paper for the important telephone book requirements, mimeograph papers, toweling sheets, etc.

The Pacific Coast pulp production is being used by manufacturers of paper for essential war uses and supplying substantial quantities of pulp under government lease-lend contracts.

Mr. Ferguson indicated to the stockholders present that the volume of business of the Company and subsidiaries for the first quarter of 1942 showed an increase of 30 per cent over the first quarter of 1941 and that net income for the first three months of 1942 was running considerably above the 1941 rate based upon tax reserves at the corporate income and excess profits tax rates now prevailing. However, Mr. Ferguson stated that in all probability increased tax reserves would be required when the Revenue Act of 1942 is finally enacted.

A payment of $500,000.00 has been made on the Company's bank loan during the first quarter of 1942 which leaves the term loan standing at a total of $1,900,000.00 at March 31, 1942.

The following directors were elected for the ensuing year: Ossian Anderson, J. O. Bulkley, F. L. Carlisle, T. H. Cosford, W. K. Dick, W. J. Dixon, R. K. Ferguson, E. R. Gay, H. S. Lewis, H. E. Machold, R. B. Maltby, C. B. Martin, J. A. Quinlan, W. H. Versfelt.

# Bastedo Marks 40 Years In the Paper Industry

● Swift Army interceptor planes roared past the office windows of the Longview Fibre Company's San Francisco offices, and down in the street there were throngs of khaki clad men, for it was April 6, 1942—Army Day.

But to the keen-eyed man sitting in one of the big offices, Army Day, or April 6, had another significance.

"Yes," said C. J. Bastedo, sales manager for the Longview Fibre Co., "yes, it was just 40 years ago today that I entered the paper industry. There have certainly been a lot of changes in the paper game since 1902. Look how the size of paper making machines has increased.

"Why, when I started work with the Canada Paper Company, Toronto, Canada, the machine I worked on trimmed 56 inches, and when it was going full speed, it traveled at 250 feet per minute. We thought that was pretty speedy then, but look at the machines today!

"Another thing that impresses me looking back over four decades of paper making is the development of technical control which provides greater uniformity of paper.

"It was in 1902, when I entered the paper business that the Canada Paper Company hired a chemist. It was the first Canadian paper mill to do so. All our competitors gave us the horse laugh, because up to that time in Canada, all paper making had been done by guess and by God. Now, look today, at the research and development departments maintained by paper mills all over the world.

"Of course with the speed increase in manufacture some of the human interest has gone out of the paper making business. For example, take the tramp paper makers. They got drunk and got fired, and worked for one paper mill after another, clear across the continent and back again.

**C. J. BASTEDO, Sales Manager, Longview Fibre Co., 40 Years in the Paper Industry.**

"I remember one chap, working in a mill with me back in Quebec. He left, and 18 months later he was back again. During that short time he had worked for a number of paper mills, and had even worked in the paper mill at Antioch, California.

Mr. Bastedo was born in Ontario, Canada, and on April 6, 1902, he went to work for the Canada Paper Company, Toronto, as assistant bookkeeper. This firm was both a manufacturer and jobber of paper.

Shortly after he was transferred to the mill and was there for five years, three of them spent in the mill, learning the paper business from the grinders up. The year he went to work the company put in a 156-inch newsprint machine, and all the other paper manufacturing concerns thought they were crazy.

When Mr. Bastedo left he was purchasing agent. He joined the J. R. Booth Company, Ottawa, Canada. J. R. Booth, founder of the company, was one of the most unusual paper makers who ever lived. A Vermont Yankee by birth, Mr. Booth came to Canada and made a fortune in the lumber business. At the age of 81 when most men have been called to their fathers, or at least, are sitting comfortably by their hearthstones, Mr. Booth decided to go into the paper manufacturing business, and he actively managed the lumber and paper making business he had founded until his untimely death at 97.

In 1912 Mr. Bastedo left the Booth company and went on the road selling paper mill felts and wires. Later he came to Vancouver, B. C., to take over the receiver-managership of the Western Paper Mills there.

It was in 1913 that he came to California, where he became associated with the California Paper & Board Mills, which is now the Antioch mill of Fibreboard Products Inc.

At that time D. H. Patterson, president of Fibreboard was superintendent of the mill, and Mr. Bastedo was sales manager, selling pulp and doing some of the purchasing.

In 1922 he took a sales trip to the Orient and among other things did some development work on a fiber case for shipping crude rubber.

Following the trip Mr. Bastedo left Fibreboard and became one of the organizers of Box Board Products Company in San Francisco, a concern making folding paper boxes.

In 1930 he left that concern and joined the Longview Fibre Company.

"My hobbies?" asked Mr. Bastedo. "Well, I guess a pretty bum game of golf is a minor hobby, but my real one is paper.

He is a Mason, a member of the Meadow Golf Club, the Transportation Club, and the Mutual Business Club.

## Rayon's Consumption Of Wood Pulp

● The United States Bureau of the Census recently announced that in 1939 the rayon and allied industries consumed 195,074 tons of wood pulp and 53,183 tons of cotton linters.

## Texas Gulf Sulphur Melter Installed In Longview Mill

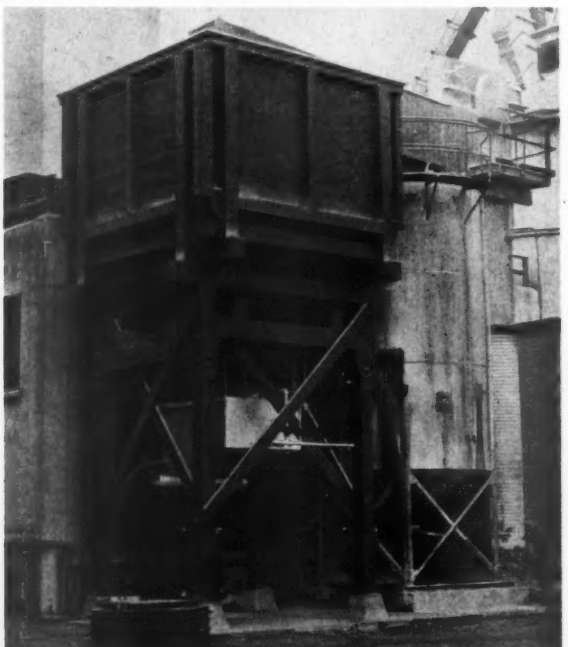
● A Texas Gulf sulphur melter has recently been installed at Longview Mill, Pulp Division Weyerhaeuser Timber Company, Longview, Washington, which is said to be the first melter of its type on the Pacific Coast. The melting unit is 5 feet 4 inches by 5 feet and is 2 feet in depth at the back by 3 feet in depth at the front and is located beneath a large wooden hopper in which 35 to 40 tons of sulphur can be stored. Sulphur is fed directly into the melter from the hopper above by gravity.

The molten sulphur flows by gravity from the heating element of the Texas Gulf sulphur melter into a small storage or surge tank and from there it flows directly into the rotary sulphur burners, also by gravity. Pipes and tanks containing the molten sulphur, between the melting elements and the burners, are steam jacketed to maintain adequate temperature to assure free flow of the liquid sulphur.

There are 154 square feet of heating surface in this unit which is entirely steam heated. The heating element is located low in the melter facilitating immediate run-off of the molten sulphur after changing from solid to liquid state and also immediate contact of remaining solid sulphur with the heating elements. This arrangement makes for efficient operation because the unit does not rely on heating the sulphur in large quantities and maintaining the whole mass at high temperatures. Only the sulphur in the immediate vicinity of the heating elements is brought to a high temperature, which then flows out of the heating unit, into the steam jacketed flow boxes and storage, or flow, tanks.

The Texas Gulf sulphur melter is capable of melting 6,720 pounds of sulphur per hour and is being operated at the rate of about forty tons per day at the present time, according to George H. McGregor, superintendent.

The steam heated unit is made of ⅜-inch sheet steel, supplanting the conventional large, bricklined steel melting pots. The new equipment is faster in operation, easily maintained and repaired, occupies less room, has considerable capacity and can be shut down or started up by just opening or closing a steam valve.



**The Texas Gulf Sulphur Melter recently installed at the Longview Mill, Pulp Division Weyerhaeuser Timber Co. From the wood storage chest the sulphur flows by gravity to the small steel melter suspended below. Heated to a molten condition by steam the sulphur flows from the bottom into a surge tank and then into the burners.**

**Only a small quantity of sulphur is melted at a time thereby conserving steam. The melter may be quickly started or shutdown.**

## Duignan Conducts Personnel Classes

● Peter D. Duignan of the industrial relations department, Crown Zellerbach Corporation, conducted 15 classes in personnel management, held under the auspices of Stanford University at the San Mateo Junior College.

Average attendance at the classes was between 30 and 35 people. W. D. Welsh of the executive offices of Crown Zellerbach and Otto Hartwig, general safety supervisor, from the Portland office of the company, each conducted a class for Mr. Welsh.

## St. Helens Working On Conservation and Salvage

● Pulp and paper mills of the Northwest are behind the current movement to (1) conserve metals, (2) improve maintenance practices to keep machinery and equipment in good operating condition, (3) utilize materials from mill scrap piles and (4) return unusable metals to regular industrial channels for reclamation.

St. Helens Pulp and Paper Company, St. Helens, Oregon, has a salvage shop equipped with converting equipment to facilitate the re-use of scrap metals. The maintenance and construction crews have not been increased, but all of the men formerly devoting their time to building jobs have switched over to full-time maintenance since the building has come to a stand still. This makes a total of about 50 men in the St. Helens plant who are working on maintenance.

Not only has the maintenance personnel been increased in this way, but an additional burden has been placed on the ingenuity—as an example take the case of the St. Helens Pulp and Paper Company's installation of a liquid alum system. It was found that there was insufficient rubber-lined pipe for the job, so iron pipe was lined with lead tubing and installed in place of the rubber-lined pipe which was not available.

Even though this sort of substitute requires more labor, it does serve the purpose as well as the rubber lined pipe, according to Max Oberdorfer, Jr., assistant to the manager. He says this is not a new technique; that it has been done for years, but not recently, until the rubber situation became acute.

Mr. Oberdorfer states that the current program of conserving all usable metals has already been found a valuable adjunct to the mill; especially as pertaining to shafting and roller chain. Metals which cannot be used at the plant are being junked and returned to the regular "blood stream" of industry.

## British Columbia Japs Transferred East

● Practically all Japanese pulp and paper workers have been removed from British Columbia mills and looging camps and are either in the detention base at Vancouver or established in construction camps in the interior.

Pacific Mills, Ltd., at Ocean Falls was the largest employer of Japanese labor, having about 400 on the payroll. British Columbia Pulp & Paper Company also had a large number at Woodfibre and Port Alice. Powell River Company operated an all-white crew.

Three thousand Japanese, mostly pulp mill workers and loggers, are being absorbed by woods camps in northern Ontario.

## Ten More From Camas Join Armed Forces

● Ten employees of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, joined the nations armed forces during the month of March. Five of these men went into the army, four in the navy and one in the naval reserves.

This brings to 143 the number of plant employees who have joined the nation's armed forces.

# Paper Mill Men's Club Meets, Elects Officers

● Second Southern California paper industries club to hold election of officers and directors during the second week of April was the Paper Mill Men's Club of Southern California. Election was held at a dinner-meeting on April 10th at the Riviera Country Club in Santa Monica, with the following results:

President, Paul Raab, Lily-Tulip Cup Corporation, who was elevated from the post as vice president.

Vice president, J. Dwight Tudor, Fibreboard Products Inc., who was lifted up a notch from secretary.

Secretary Ansel A. Ernst, Eevrett Pulp & Paper Company, who was raised from the post of treasurer.

Treasurer, Gerry A. Thiem, Milwaukee Lace Paper Company, who was elected from the ranks of the membership.

To Lester E. Remmers, Crown-Willamette Co. Division of Crown Zellerbach Corp., who has presided over PMMC activities during the past year, a rousing and rising vote of thanks was given by all members present. He acknowledged the tribute with a few words, and stepped down from the Chair to make way for his successor.

It was President Raab who was besieged by motions and proposals in great number when the official business got under way after election had been concluded.

Pleading with his membership to keep the motions before the house to a minimum in order to preserve the order of parliamentary procedure, Raab opened:

"This house has more motions than a Hula dancer, gentlemen."

As sympathetic proponents withdrew their rapidly-fired motions, order was restored and the members got down to discussing various business considerations for the "good of the order." President Raab had been introduced to practical experience "the hard way," and his year by then was inaugurated formally.

While election and inauguration of officers constituted the prime business of the session, a very interesting secondary feature was the showing of "Railroadin'," a 30-minute sound and color movie of the railroad industry, replete with many shots of speeding streamliners and fast freights. Since many members of the Paper Mill Men's Club are rail enthusiasts, with considerable of the membership being hoggers, dispatchers, shop foremen —yes, even owners—on their model pikes in home or garage, the movie rated extra attention. The film was sponsored by American Locomotive and General Electric, and was shown through the courtesy of Everett J. Spotts, Merchant Shippers Association.

Harry Fields was nominating committee chairman and was chief of the vote-counting department. He had a busy time counting ballots for the spot finally won by Gerry Thiem, and was roundly applauded when his announcement regarding that office was delivered.

All new officers gave very brief words as they edged into their new club berths. Balloting for all positions except that of treasurer was done in the form of an unanimous vote affecting those in the official chairs.

While President Raab was wrangling with a wave of "motions" from the floor, one stood out over all others for a time, and it passed readily after finally having been segregated from its "competitors." It was a motion that any man in the Club who joins the armed forces of the United States of America, shall not lose his turn to succeed to an executive office if such military duty interferes with the normal ascension through the chairs.

It is expected that at the next meeting an announcement will be made concerning a new type of annual meeting, not to be confused with the big Hi-Jinks which will be continued.

Head tablers at the April meeting were: Neil Sinclair, Robert G. Marquis, Fran Jenkins, Ansel Ernst, Paul Raab, Lester Remmers, Dwight Tudor, Anthony Sheehan, Merle Paup, Frank Gladden and Grayson Wheeler.

Almost fifty men attended the meeting, many enjoying some golf during the afternoon. After business and entertainment had concluded, the crowd adjourned to the game rooms.

## Longview Fibre Has New First Aid Station

● Longview Fibre Company, Longview, Washington, completed a new first-aid station at the plant on April 1st. It is a modern, convenient station attended by a full-time nurse, Mrs. Bessie Rodgers. In addition to the nurse's services, Dr. Paul S. Armour is on duty at this station five days each week from 1:30 to 3:15 in the afternoon. The services of both are provided by the Columbia Clinic of the Longview Memorial Hospital.

The first-aid station has a drug room, reception room, lounging room for the women employees, utility room and a consulting room.

Adjacent to the clinic is an assembly hall which has been converted into a casualty station for use in case of an emergency. It will accommodate forty cots.

## Nelson Webb of Eastwood Coming to Coast

● Nelson Webb, general superintendent of the Eastwood-Nealley Corporation, Belleville, N. J., will arrive on the Pacific Coast April 20th to spend several weeks calling on the mills with John M. Fulton and Ed Tidland of the Pacific Coast Supply Co., representatives for Eastwood wires.

Mr. Webb is an experienced technician in wire manufacturing and holds a number of patents on design and manufacture of fourdrinier wires.

## Paper School Professors Visit Mills

● During the first half of April ten of the Crown Willamette Paper School professors spent three days visiting several of the pulp and paper mills of the Northwest.

C. A. Enghouse, technical supervisor, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, West Linn, Oregon; Fred A. Olmsted, technical supervisor and F. W. Flynn, both of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, visited mills at Port Angeles and Port Townsend on April 6th, 7th and 8th. While on this trip they attended the TAPPI meeting at Port Angeles on April 7th.

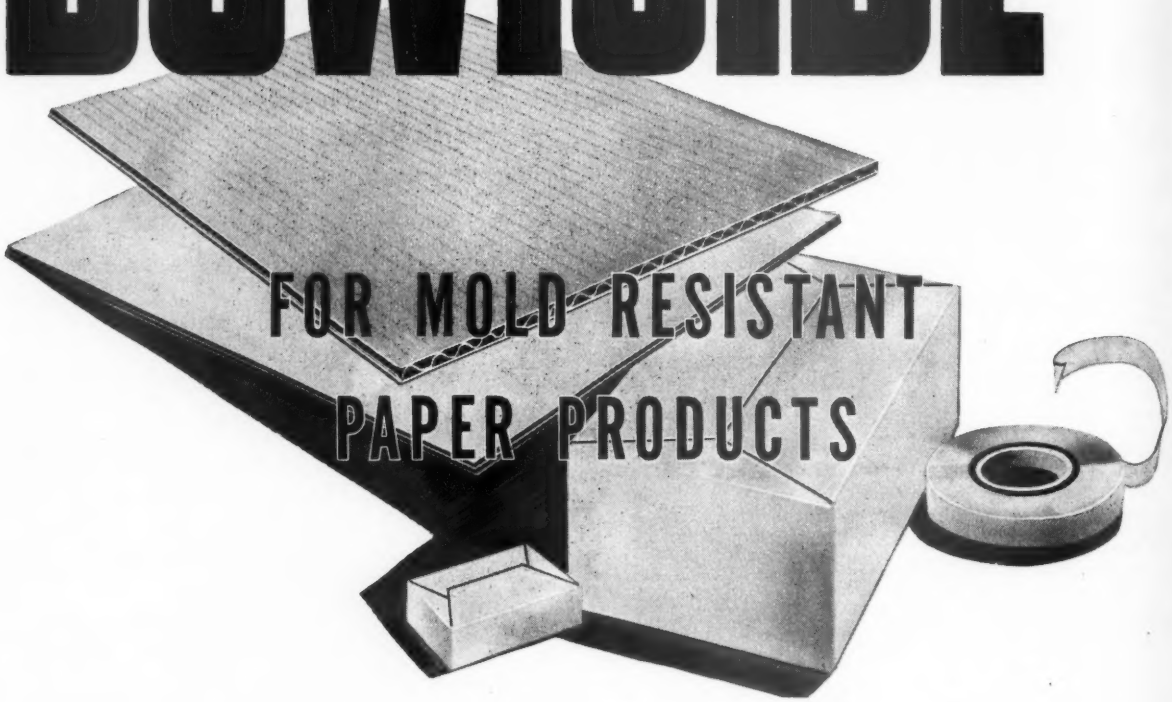
C. A. Anderson, wood technologist, and Fred Sievers, groundwood mill superintendent, both of the Camas mill, also attended the TAPPI meeting and called at mills in Port Angeles and Everett on April 7th, 8th and 9th.

Paul V. Millard, foreman of the finishing room, and Herman Junge, superintendent of the sawmill, Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, visited mills at Everett on April 13th, 14th and 15th.

The other paper school men from Camas who visited mills on the Sound were Rod Crosby, registrar; G. H. Gallaway, assistant technical supervisor; and George Bailey. They called at Port Angeles and Port Townsend on April 13th, 14th and 15th.

**The PAPER MILL MEN'S CLUB of Southern California elected officers at its April 10th meeting. They are, left to right, President PAUL RAAB, Lily-Tulip Corporation, formerly vice president; Secretary ANSEL ERNST, Everett Pulp & Paper Co.,, formerly treasurer; Retiring President LESTER E. REMMERS, Crown Willamette Paper Co.; Vice President DWIGHT TUDOR, Fibreboard Products Inc., former secretary; Treasurer GERRY A. THIEM, Milwaukee Lace Paper Co., elected from the ranks as the money-keeper.**

# DOWICIDE



## FOR MOLD RESISTANT PAPER PRODUCTS

MANY TYPES of paper products are constantly subjected to conditions which favor mold growth. Such products can be effectively treated by the proper application of certain chlorinated phenols sold under the trade mark Dowicide*.

Corrugated and laminated board are made mold-resistant by treating the stock at the beater or calenders. Egg case fillers and flats have been effectively protected by the application of Dowicide B or G. The mycostatic effect is so pronounced that even on the eggs in these treated containers excellent control of mold is obtained.

Dowicide is equally effective in such diverse applications as soap wrappers, waxed wrappers, coated papers and gummed tape. Numerous other paper products can be made mold-resistant with Dowicide. Write for complete technical information.

GREAT WESTERN DIVISION
THE DOW CHEMICAL COMPANY
San Francisco, California
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*Use Dowicide*

(1) To control slime conditions.
(2) To prevent stain and decay on pulp logs.
(3) To preserve lap and pulp stock.
(4) To prolong felt life.
(5) For mold-resistant paper products.
(6) To preserve proteins, starches, and other sizing materials.
(7) To reduce maintenance costs.

*Trade Mark Reg. U. S. Pat. Off.

## New Rayon Fiber For Carpets Announced

● The curtailment of carpet and rug production because of the war's tightening of the wool situation, has increased interest in the development of rayon staple fibers. Prior to the war the use of staple fiber in carpeting was still in the development stage.

Recently the American Viscose Corporation announced the development of a new rayon staple fiber designed especially for use in rugs and carpets. Named "Tufton," the new fiber is designed not only for the tuft of rugs, but also for other purposes where a tough, durable fiber is needed.

In designing "Tufton" the company sought the combination of characteristics that would give it the greatest possible value for consumer satisfaction. Toughness was produced by combining the best possible degrees of resilience, flexibility, and tenacity. Freedom from soiling, an important factor in floor coverings, was aided by giving the fiber special qualities of smoothness.

Rugs made with "Tufton" are more colorful than those made with the natural fibers, it is claimed, since rayon has better clarity of color than such fibers. This well-known quality of rayon plus the wearing quality of "Tufton" in a rug or carpet have given the new fiber an established place in the floor covering field. Research work on the fiber is being continued with the object of extending its field of usefulness.

## Honor Students Inspect Mills

● Harold Roley and Harlin Scobba, fourth year honor students of the Crown Willamette Paper School and employees of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, spent the week of March 29th visiting various mills of the Northwest. This trip was provided by the company in recognition of the students' outstanding work in the paper school during the past year.

The mills visited are as follows: Longview Mill, Pulp Division Weyerhaeuser Timber Company, Longview; Longview Fibre Company, Longview; Washington Pulp and Paper Corporation, Division of Crown Zellerbach Corporation, Port Angeles; National Paper Products Company, Division of Crown Zellerbach Corporation, Port Townsend; Soundview Pulp Company, Everett; Everett Mill, Pulp Division of Weyerhaeuser Timber Company, Everett; and Everett Pulp and Paper Company at Everett.

## New Rayon Yarn Suitable For Military Uses

● The entire output of "Rayflex," a high-tenacity rayon yarn made by the American Viscose Corporation, is now being used for making self-sealing gasoline tanks for military airplanes and tire cords for heavy duty tires.

The major portion of the tires made of "Rayflex" are for army trucks, reconnaisance cars, and other motorized military equipment, according to the company's announcement. The use of "Rayflex" for tire cords is helping to conserve the country's supply of rubber, it is pointed, since tires made with rayon cords require less rubber and last longer than those made with other types of cord.

# Powell River May Build Vancouver Chipping Plant

● Powell River Company has acquired a 90-day option on ten acres of land in the Queensborough district of New Westminster at the mouth of the Fraser River and, if present plans materialize, will establish a chipping plant there to utilize hemlock and other lumber refuse from Fraser River sawmills.

"A good many rough edges have to be smoothed out first," said an official of the company, commenting on the negotiations that have been proceeding between Powell River and the New Westminster city council for the acreage.

Cost of the proposed plant has not yet been indicated, and when it is ready to operate will be determined by the speed with which the company can get delivery of required equipment.

Alaska Pine Company, headed by Leon Koerner, is located near the site. This is one of the largest exclusive hemlock operators on the coast and it is understood that all its refuse would be available for Powell River Company should the latter require it for pulping purposes. Some of the largest sawmills in the province, notably Canadian Western Lumber Company at Fraser Mills and Canadian White Pine Lumber Company, are also close to the site of the proposed chipping plant and their refuse might be taken over by the new Powell River plant and converted into hogged fuel for use of its pulp mill.

Policy of Powell River Company in this connection is guided by a desire to reduce wastage from sawmill operations while at the same time providing valuable raw material for its pulp and paper operations.

## Fernstrom Conserving Critical Materials

● Fernstrom Paper Mills, Pomona, California, is cooperating in the nation's drive to conserve metals and other critical materials by a recent notification to all departments that substitutes should be found for all metals on the restricted list. Use of wood to replace metals in all possible instances, such as for storage tanks, was strongly urged in the notice. The conservation program at the Fernstrom mills is resulting in salvage of copper pipe, lathe turnings and other metals.

The Fernstrom mills are making a determined effort to keep machines in peak running efficiency by scheduling in advance. Production and maintenance requirements are figured in advance on all machines.

Keeping the scrap pile an asset at the Fernstrom mills, is one of the major objectives. Any parts that can be reused are being so handled, while unusable scrap is being turned in on new castings and other required pieces so that fullest utilization of all materials is achieved.

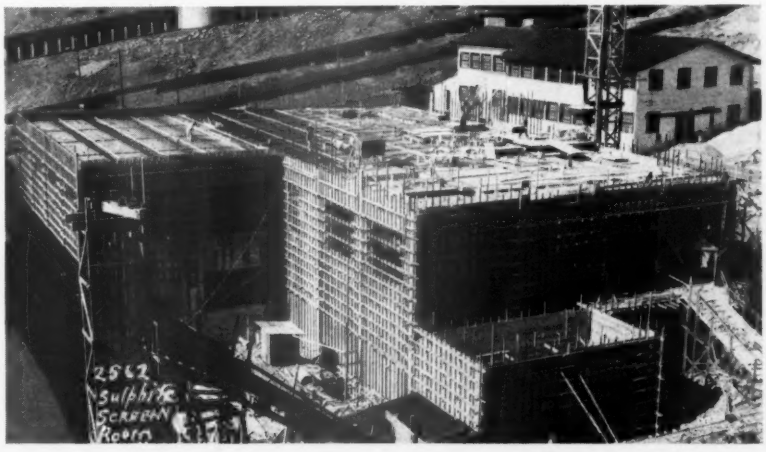
## Asks Probe of Government Use of Paper

● In Washington, D. C., April 6th, Representative Jones of Ohio contended that price administrator Leon Henderson should investigate personally the conservation of paper by Government agencies.

Henderson had advised Jones that Lessing J. Rosenwald, chief of the bureau of Industrial Conservation, was investigating Jones' assertions that propaganda agencies were wasting paper while the Government was asking people to conserve it.

"The amount of paper involved and the man power used in the propaganda agencies," Jones wrote Henderson, "makes this problem as important as any that has received your personal consideration, unless there is a double standard, one for the American people and another for the Federal Government.

"May I again suggest that you tackle this problem personally with your usual aggressive vigorous action."




**The POWELL RIVER COMPANY'S New Sulphite Screen Room as it appeared the latter part of March.**

## TO WIN THIS WAR

**Every American Pulp, Paper and Paperboard Producer is trying to obtain maximum production with a minimum use of strategic materials. As never before the industry's ingenuity is being called upon to "Make It Last."**

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# WPB Orders During Past Month

## Summary of those affecting the Pulp and Paper Industry

**WPB—March 3rd**—"The WPB Containers Branch today pointed out that the November 1941 changes in specifications for paperboard shipping containers were not intended to establish maximum thicknesses for the materials used in making such containers.

"Modified regulations governing the shipping of freight in corrugated and solid fibre board containers were announced on November 3, 1941. These specifications, permitting the use of thinner paperboard parts, were expected to save approximately 10 per cent of normal paperboard consumption.

"Since that time the Container Branch has been advised that some shippers believe that the new specifications were meant to be maximum rather than minimum requirements.

"This is not true, the Branch said. While the change in the specifications—Supplement 17 to Consolidated Freight Specifications Number 14—reduced the minimum requirements, it was not intended to affect packing of articles requiring a stronger box. The revised specifications must be exceeded in some cases, it was pointed out, in order to transport certain commodities safely.

"The Branch emphasized that it does not advocate the use of inadequate shipping containers. If shippers were to adopt the minimum specifications, which became effective November 15, 1941, as maximum specifications, there might be greater losses in goods and materials than could possibly be equalized by savings effectuated by modified specifications.

"Heavier loads of cars and rougher handling, not only by the railroads, but all along the line of production, necessitate the continued use of discretion on the part of shippers."

**WPB—March 4th**—"Larger quantities of rayon will be made available to hosiery and weaving industries under an order (M-37-c) issued today by the War Production Board . . . As a result of the order, the bulk of the women's hosiery manufactured after April 1st will be of rayon instead of silk and nylon . . . The order provides for the replacement by rayon of the silk and nylon formerly used on a pound for pound basis, based on silk and nylon used during the first half of 1941 . . . Under the new order rayon producers are required to set aside beginning April 1st, 17 per cent of their viscose and cupramonium output . . . The allocation of acetate remains unchanged at 6 per cent. These percentages are applied after defense and export requirements have been met . . . The order also directs rayon producers to set aside, beginning April 1st, 4 per cent of the viscose and acetate production for export to other American republics. This percentage is to be applied to the entire output, before defense requirements have been met.

**OPA — March 5th** — "Approximately 200 manufacturers of kraft converting papers, coarse sulphite papers and tissue papers have been asked by the Office of Price Administration to agree not to exceed prices at which they sold all grades of such items during the period from October 1st to October 15th, 1941, inclusive . . ."

**OPA — March 9th** — "In view of the fact that price action on wood pulp is being considered, Leon Henderson, administrator of the Office of Price Administration, today suggested that pulp producers, in entering into contracts for the second quarter of 1942, may prefer to refrain from inserting prices in their contracts at this time. Mr. Henderson indicated that the OPA is not yet prepared to release maximum prices."

**WPB—March 12th**—Wood Pulp Allocation. General Preference Order M-93, To Conserve the Supply and Direct the Distribution of Wood Pulp. "Whereas, the national defense requirements have created a shortage of wood pulps, as hereinafter defined, for defense, for private account, and for export and it is necessary, in the public interest and to promote the defense of the United States, to conserve the supply and direct the distribution thereof: . . ." "Allocation actually will be made with the advice of a committee composed of representatives of various Government agencies, plus a committee from the industry, with members chosen from all branches (i.e., producers, integrated mills and consumers)." Outlook—"It is probable that the degree of control exercised over pulp will be mild at the present time. The mechanism established, however, provides for complete control, from pulp production to the end use of the paper. It is possible that as the stringencies of the war effort increase, the degree of control exercised will be greater."

**OPA—March 19th**—Amendment No. 2 to revised price schedule No. 30, Waste Paper. This amendment changes the paragraph on enforcement and also changes some of the definitions and prices as well as making it mandatory to invoice all sales by grades. Persons who have evidence of violations to report them to the Office of Price Administration.

**WPB—March 19th**—Phillips Dennett, president of the Bird Machine Company, was appointed chief of the Pulp and Paper Machinery Section of the Special Industrial Machinery Branch.

**WPB—March 22nd**—Division of Industry Operations. Announcement of a fundamental change in the priorities system through adoption of the Production Requirements Plan. "A specific requirements approach to the control and distribution of scarce materials will replace the use of general or blanket priority rating orders as rapidly as the necessary new orders and procedures can be put into effect. Between April 1st and June 30th, most of the blanket rating orders will be revoked or allowed to expire, and companies which have been operating under blanket ratings will be required to apply for priority assistance under the Production Requirements Plan.

"The rapidly increasing materials requirements of the war program make it impractical to continue the use of preference ratings which have been assigned under existing "P" orders to whole industries, without any exact check of the amount of such material which such ratings may be used to obtain. Through the Production Requirements Plan, the Director of Industry Operations will continue to assign ratings to deliveries of materials for essential uses, but the rating assigned in each case may be used to obtain only a specified quantity of materials or products . . ."

**WPB — March 23rd** — Interpretation No. 2 of Preference Rating Order P-100 as Amended. "Operating supplies, as defined in paragraph (b) (5) of Preference Rating Order No. P-100, does not include typewriters, adding machines or other business machines, desks, filing cabinets or other such items of durable office equipment, and the preference rating assigned by Preference Rating Order No. P-100 may in no circumstances be applied to deliveries of such items."

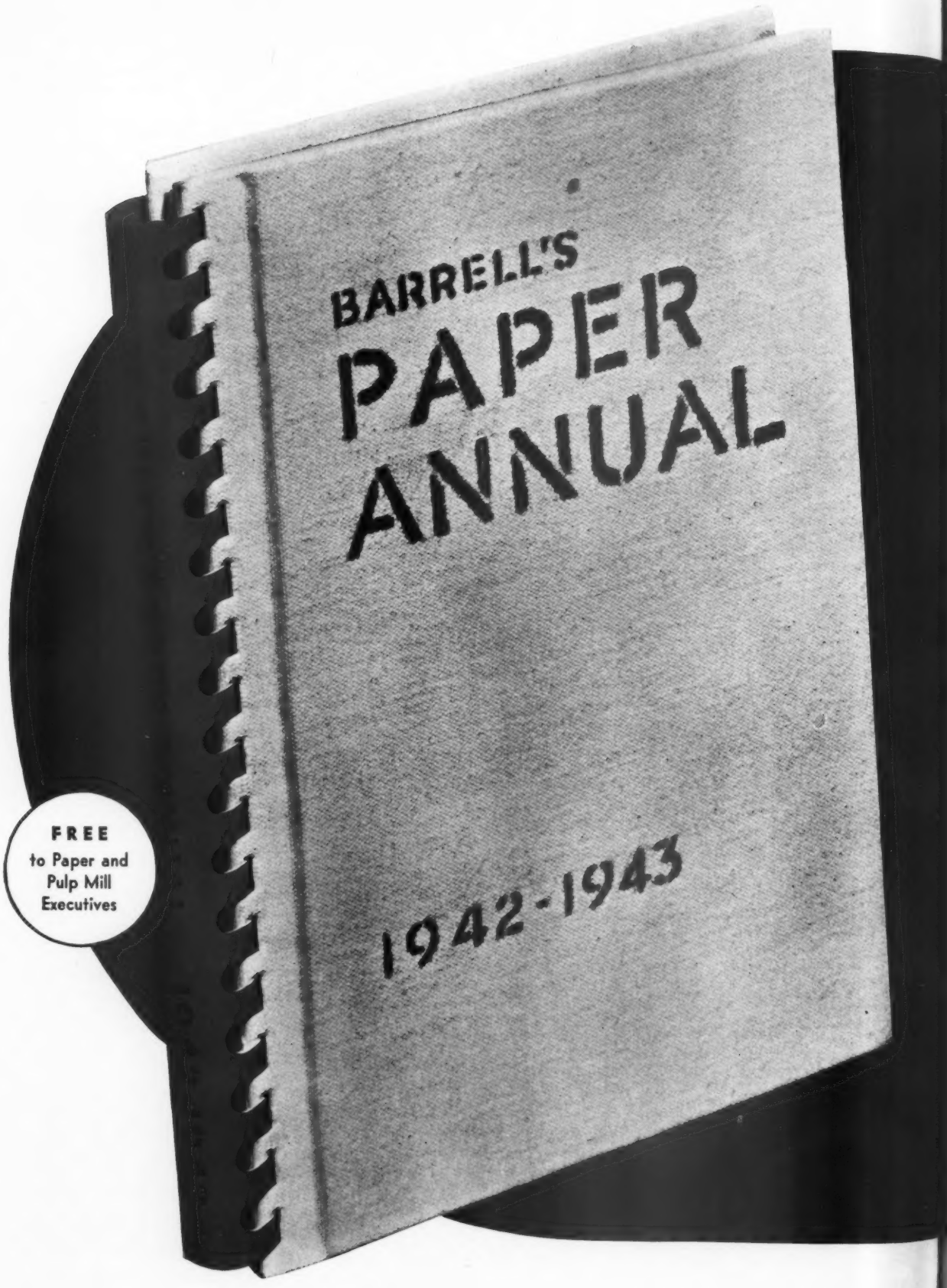
**ODT—March 23rd**—Office of Defense Transportation. General Order No. 1—Merchandise Traffic. Establishes minimum weight limits, beginning May 1st on loading of cars carrying less-than-carload freight. The order fixes a minimum weight of 6 tons, effective May 1st, raises this minimum to 8 tons per car on July 1st, and to 10 tons per car on and after September 1st . . ."

**OPA—March 24th**—Voluntary agreement transmitted to all paper merchants covering both fine and coarse papers, asks that they not sell the products referred to in the order at prices higher than that stated in the agreement.

**WPB—March 25th**—Amendment No. 1 to General Preference Order M-93 (Wood Pulp Allocation). Deals with limitation of inventory which was previously held to 60 days supply. Amendment exempts groundwood pulp and all wood pulp held for delivery under Lend-Lease Act and pulp held for ordnance, photographic base paper or for the production of rayon or staple fiber. This holds until May 1st when allocation takes effect.

**OPA — March 25th** — Producers of wood pulp who signed individual agreements with the OPA not to increase prices must absorb for the time being the added costs resulting from recent freight increases, John E. Hamm, Acting Administrator, announced today. A large majority of wood pulp producers signed agreements not to increase prices for any reason without giving 30 days notice to the OPA.

The 6 per cent freight rate increase, authorized as effective March 13th by the Interstate Commerce Commission, is a factor being considered in establishing the forthcoming price ceilings on wood pulp.


BARRELL'S
PAPER
ANNUAL
1942-1943
FREE
to Paper and
Pulp Mill
Executives

**OPA—March 26th**—"Standard newsprint prices, unchanged since April 1, 1938, will continue at $50 per ton for the next 60 days at least under a temporary maximum price regulation issued today by Acting Price Administrator John E. Hamm. The new regulation (No. 16) is issued under the Emergency Price Control Act of 1942. It will go into effect April 1, 1942, the start of the second quarter, and will expire on May 30th, 1942. On or before this expiration date, a permanent regulation will be issued."

**WPB—March 28th**—Conservation Order No. M-103. Dyestuffs. Drastic curtailment civilian use of organic coloring matter. Effect will be to prohibit the use of the critical anthraquinone vat dyes in civilian work and set aside quantities for war use. In all, the order restricts the use of ten basic dyes ranging from orange and yellow to brown, khaki and olive drab.

**OPA—April 1st**—Suggested maximum prices for used multi-wall paper bags, or paper shipping sacks, aimed to encourage conservation of kraft paper and to relieve the pressure of demand on burlap bags. Investigation by OPA has shown that the demand for multi-wall paper bags may increase to 60,000,000 this year, or about 20,000,000 more than were used last year by shippers of salt, sugar flour, cotton, feed and other food products . . ."

**WPB—April 6th**—Order to the effect that manufacturers of paper, paperboard and paper products who consume waste paper will be permitted to accumulate inventories of this essential material without restrictions. Purpose of the order is to encourage mills to stock up with waste paper while Government sponsored collection agencies are gathering supplies in ever increasing quantities instead of delaying purchases until possible transportation or labor shortages may make it difficult to obtain supplies.

**OPA—April 9th**—All export sales of paper board, excepting those sold by producers on f. a. s. vessel basis, are excluded from Revised Price Schedule No. 32 at the result of Amendment No. 1 to the Schedule (Paper Board sold East of the Rocky Mountains), issued today by Leon Henderson, price administrator.

The amendment, which becomes effective April 9, 1942, also clarifies the definitions of "paper board," "person" and "producer."

Producers who export paper board f. a. s. vessel now may add to the maximum prices established for domestic sales the actual cost for the extra packing required for export shipment, plus the actual cost of the extra freight occasioned by such packing. All other export sales which previously were covered by the Schedule, will be treated in individual agreements with the producers and consumers, Mr. Henderson said.

As amended, the term "paper board" now refers to all kinds, grades, types, calipers, colors and packings of paper board described in the Schedule and leaves specialty paper board for separate treatment, as was intended by Amendment No. 6 to the original Schedule on February 3, 1942.

The definition of "person" has been expanded to include in its meaning the United States, the States, or any of their political subdivisions or agencies.

To correct an unintended variance in the scope of the meaning of "producer" the term has now been broadened to include agents or representatives of producers.

**WPB—April 9th**—WPB order effective immediately, prohibits manufacture or delivery of new, used or reconditioned machinery without WPB approval. Government and Lend-Lease orders excepted, as were those carrying a priority rating of A-9 or higher.

In addition manufacturers may fill certain orders involving less than $200, AND IN THE CASE OF PULP AND PAPER MAKING MACHINERY LESS THAN $1000 . . . The $200 limit applies to firms making machines for paper converting, printing and publishing, the bakery and confectionery trade, beverage bottling and industrial sewing.

## Bond Buyers Receive Flag Picture

● Each regular purchaser of War Bonds through payroll deductions at Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, is presented with a full color 12 by 15-inch mounted picture of the United States flag, suitable for framing. These are presented with the compliments of Resident Manager J. E. Hanny for the employees investment in the security of America through the regular and continuous purchase of War Bonds.

## Three Camas Departments 100% Bond Buyers

● Three departments of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, have subscribed one hundred per cent to the regular purchase of War Bonds, according to J. E. Hanny, resident manager. These departments are steam plant, number two finishing room and the mill technical department.

## Pacific Mills Expansion Program Slowed

● While Pacific Mills, Ltd., is proceeding with the building of a new screen room at its plant at Ocean Falls, many other features of the $750,000 expansion program previously announced have been held in abeyance because of difficulty in getting delivery of the required equipment.

"The intention is still there and eventually we will go ahead with the whole program, which will have the effect of stepping up our production in several lines and adding bleached sulphite pulp to our output," said John A. Young, vice-president of Pacific Mills.

"Eventually we will install all the facilities required by the larger program, but we have reached the conclusion that to plan broad-scale expansion with a view to pushing it through to completion this year, as originally expected, would be quite impossible. We have therefore decided to go ahead a step at a time in accordance with the flow of machinery. We are not pressing for immediate delivery."

Meanwhile James Galloway of J. Galloway & Sons, Vancouver contractors, is supervising construction of a building to accommodate new screens obtained from Sherbrooke Machinery Company, Sherbrooke, Quebec.

Construction at Ocean Falls at present chiefly involves living accommodation for white workers engaged to replace several hundred Japanese, who are being evacuated from the coast area. The program consists of 50 duplex houses, conversion of the dock structure, conversion of four Japanese dormitories, Japanese pool hall, recreation hall and steam plant building.

## Lang Joins Navy Lab. in Bremerton

● Linton Lang, project chemist with the Puget Sound Pulp, has taken a position as assistant chemist with the United States Navy Laboratories in Bremerton. Mr. Lang is a graduate of the University of Washington in the Department of Chemical Engineering.

# Metals or Newsprint— Eastern Canada's Problem

● Serious shortage of power in eastern Canada is forcing the United States to choose between increased shipments of aluminum, carbide, magnesium and nickel required for American war industries and maintaining its imports of newsprint from the dominion, but British Columbia mills are not likely to be hit if the choice favors the metals, unless nation-wide paper production rationing is ordered.

While British Columbia mines are shipping a wide variety of metals to the United States, they are not competitors for the power being utilized by pulp and paper mills. Most of the metals are shipped from the Consolidated Mining & Smelting Company in the Kootenay district, whereas all the pulp and paper produced in the province is on the west coast—at Powell River, Ocean Falls, Woodfibre, Port Alice and Port Mellon.

Actually, the situation may favor British Columbia mills over the long term because if eastern Canadian pulp and paper shipments to the United States are reduced owing to power shortage there will be a greater demand for the product of the west coast mills, which are able to operate with independent sources of power.

In the east, however, the Canadian government has told the United States War Production Board that it cannot have the increased shipments of metals required while newsprint exports are maintained at the present volume. At Arvida, Que., Canada is producing 43 per cent of the aluminum manufactured in North America. It is the world's largest plant and production has been doubled since the war began, yet the United States wants still more aluminum.

Canada is also launching a big magnesium program. Carbide is being produced on a large scale in Shawinigan, Quebec. The United States can have more of these items, but it may have to sacrifice newsprint in the bargain.

**ROBIN BELL-IRVING, Vice-President of the Powell River Company and formerly resident manager of the company's newsprint mills, has been appointed a member of a committee to make a survey of the pulp and paper industry of Canada with a view to simplifying and co-ordinating production. The committee will serve under Canada's Wartime Prices and Trade Board. Mr. Bell-Irving has been away from Vancouver head office of Powell River Company for some time, studying problems of the industry with eastern Canadian newsprint executives.**

## Martin and Frank Receive CZ Service Pins

● A. B. Martin, executive vice-president of the Crown Zellerbach Corporation; and Ludwig Frank, credit manager of the Crown Willamette Division of the Crown Zellerbach Corporation, were presented with 30 and 45-year service pins at a luncheon attended by a small group of colleagues Feb. 12.

The presentation was made by Louis Bloch, chairman of the board of directors. J. D. Zellerbach, president of the corporation, spoke briefly and his remarks were appropriate to the occasion.

## Jimmy Symonds Father Of a Baby Girl

● James B. Symonds of Seattle, Pacific Coast representative of The Sinclair Company of Holyoke, Massachusetts, makers of dandy rolls and fourdrinier wires, became the father of a baby girl, Karen Ruth, on February 12th. The young lady weighed 7 pounds, 11 ounces at birth.

## Hunt Succeeds Van Arnam As Camas Office Manager

● Reed O. Hunt became office manager of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, the first of April, filling the vacancy left by the resignation of W. J. Van Arnam, which was effective the same date.

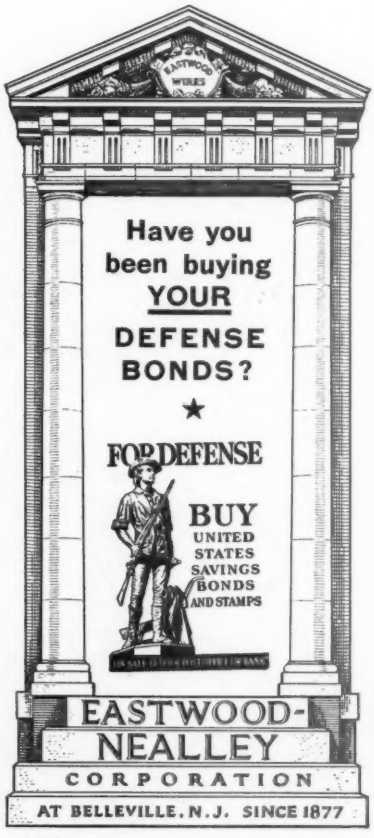
Mr. Hunt was formerly office manager of the company's plant at West Linn, Oregon.

## Conservation of Old Rope Urged for Paper Usage

● Acting to avoid a threatening shutdown of certain plants manufacturing electrical insulating papers vitally needed for many war purposes, the Industrial Salvage Section of the Bureau of Industrial Conservation on March 30th issued an urgent appeal for the salvage of old Manila rope.

These plants, according to Greoge T. Weymouth, chief of the Industrial Salvage Section of the WPB, produce more than 75 per cent of the nation's supply of insulating paper. Representatives of these plants have declared that they had on hand only a few weeks' supply of No. 1 old Manila rope, from which these papers are made. The insulating material is used, it was explained in electrical apparatus such as motors, generators and transformers, where the strength of the Manila fibre papers permits a reduction in the size of the apparatus and permits maximum speed in the application of the insulation.

In addition, the paper is used for the manufacture of telephone cables, parachute flares and a number of other direct or indirect military purposes. Much of the existing scarcity of Manila rope required for the production of the insulating papers is due to the lack of supplies from the Philippines. Consequently, Mr. Weymouth declared, it is essential that all old Manila rope not in use be returned to production. Dealers are available throughout the country to handle the rope and move it promptly to the mills which need it.




## Second Edition of "Modern" Pulp and Paper Making"

● "Modern Pulp and Paper Making," a practical treatise by George S. Witham, Sr., has just recently been published by the Reinhold Publishing Corporation, 330 West 42nd St., New York City. This is the second edition, the first having been published in 1920. Quoting from the preface:

"Since the publication of 'Modern Pulp and Paper Making' in 1920, there have been momentous changes in the industry in America: for one thing the entire Southern paper industry has come into being. . . .

"I have tried to make the new edition truly 'up-to-date' but have not delected descriptions of older equipment and processes likely to be found in many mills where my readers may be employed. The chapters have been completely rearranged in more logical grouping. . . .

"I can only hope that the new book will serve the industry as well as the first edition seems to have done. My chief motive in writing this book was to give to the young men in the paper industry the help that I would have been grateful for in my early days in the mill."

"The work of the second edition was almost complete when Mr. Witham died in June, 1939. With the assistance of his son, George S. Witham, Jr., himself a well known paper technologist, and many friends, the book has been made available to the technical public and fittingly crowns a lifetime of achievement on the part of the author."

The material is presented in twenty chapters under the following headings: Processes by Which Pulp Is Produced; Materials of Pulp; Varieties of Paper; The Sawmill; The Wood Room; The Sulphite Mill; The Acid Plant; The Alkaline Processes.

The Groundwood Mill; Screening and Refining of Pulp; Bleaching; The Beater Room; The Machine Room; The Finishing Room; Coating and Converting; Paper Defects, Their Cause and Cure; General Design of Pulp and Paper Plants; Personnel and Records; The Power Plant; and, Testing of Paper and Paper Materials. Of the 705 pages 696 are devoted to text and the balance to an index. A table of contents would have facilitated finding the twenty chapters, but these may be located indirectly through the index.

Mr. Witham's book combines description of equipment and processes with brief instructions for operating. He also includes a large number of ideas for trouble-shooting in the various departments of the pulp and paper mill. The breadth of his material is shown by the inclusion of such chapters as General Design of Pulp and Paper Plants and Personnel and Records.

As stated in the preface the main purpose of the book is to help the young men in the industry. It will also prove useful as a reference book for many of the more experienced men.

The price is $6.75 and copies may be obtained through PACIFIC PULP & PAPER INDUSTRY, 71 Columbia St., Seattle.

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TREASURY DEPARTMENT

## Camas People Awarded First Aid Certificates

● Students enrolled in the first aid classes of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, received their certificates at a safety banquet on March 19th at the Crown Willamette Inn. A total of 141 men and women received first aid certificates as a result of the training received from the classes sponsored by the company. This total was made up of the enrollment of two courses —the advanced course and the standard course.

The larger of the two was the advanced class, made up of paper mill employee students and members of their families who took both the standard and the advanced courses during the past fall and winter. Six persons of the standard course who received certificates are not mill employes; likewise 25 of the advanced group, including Mrs. J. E. Hanny, wife of the resident manager, and Mrs. Jack Robertson, wife of the safety supervisor.

J. E. Morgan, supervisor of safety, State of Washintgon Department of Labor and Industries, addressed the group, telling them of the progress which has been made in industrial first aid and safety. He said that it was formerly necessary to beg management to provide safety instruction and equally difficult to get the employees interested. He contrasted that situation with the present safety consciousness of the paper mills, where so many of the members of the industry are trained in first aid. The community of Camas is fortunate to have so many well-trained first aid workers, according to Mr. Morgan.

Otto R. Hartwig, general safety supervisor, Crown Zellerbach Corporation and Rayonier Incorporated, expressed his appreciation to the graduates for their time and effort spent in pursuit of this course, and he also said that he hoped they would not be called upon to use their first aid skills.

### Special Awards

● A. G. Natwick, assistant resident manager at Camas, presided as toastmaster and resident manager J. E. Hanny extended his official welcome to the group and also presented special awards to Mary Dole and J. M. Miller. These awards were first aid instructors' pins, qualifying these two persons as instructors for teaching the Bureau of Mines First Aid courses. This brings to eleven the number of qualified first aid instructors at the Camas plant; the others are J. H. Rickard, L. R. Mullineaux, J. B. Holmes, L. W. Bailie, D. D. Hutchison, E. W. White, G. Quilici, F. H. Weakley and H. A. Mason.

Fred Pontin, supervisor of safety instruction, Crown Zellerbach Corporation and Rayonier Incorporated, expressed approval of the accomplishments of the group and commended them for the exceptional demonstration of the week previous.

This was a presentation of first aid work by the advance classes and was open to the public. There were four men's teams and six women's teams from Crown Willamette Paper Company at Camas, and one women's team of the Camas air raid organization. Each team was composed of five members and a "patient." The demonstration was conducted along the lines of contests with team competition, except that there was no judging.

### New Classes Start

● Interest in first aid training is increasing, as indicated by the fact that so many people wanted to enroll in the standard course at the conclusion of the winter course that another group of 140 persons have enrolled. Ordinarily the session just concluded would have completed the first aid training until the fall classes convened.

Already approximately 1,000 of the mill employees and their families have received first aid training at the Camas mill.

### Those Receiving Certificates

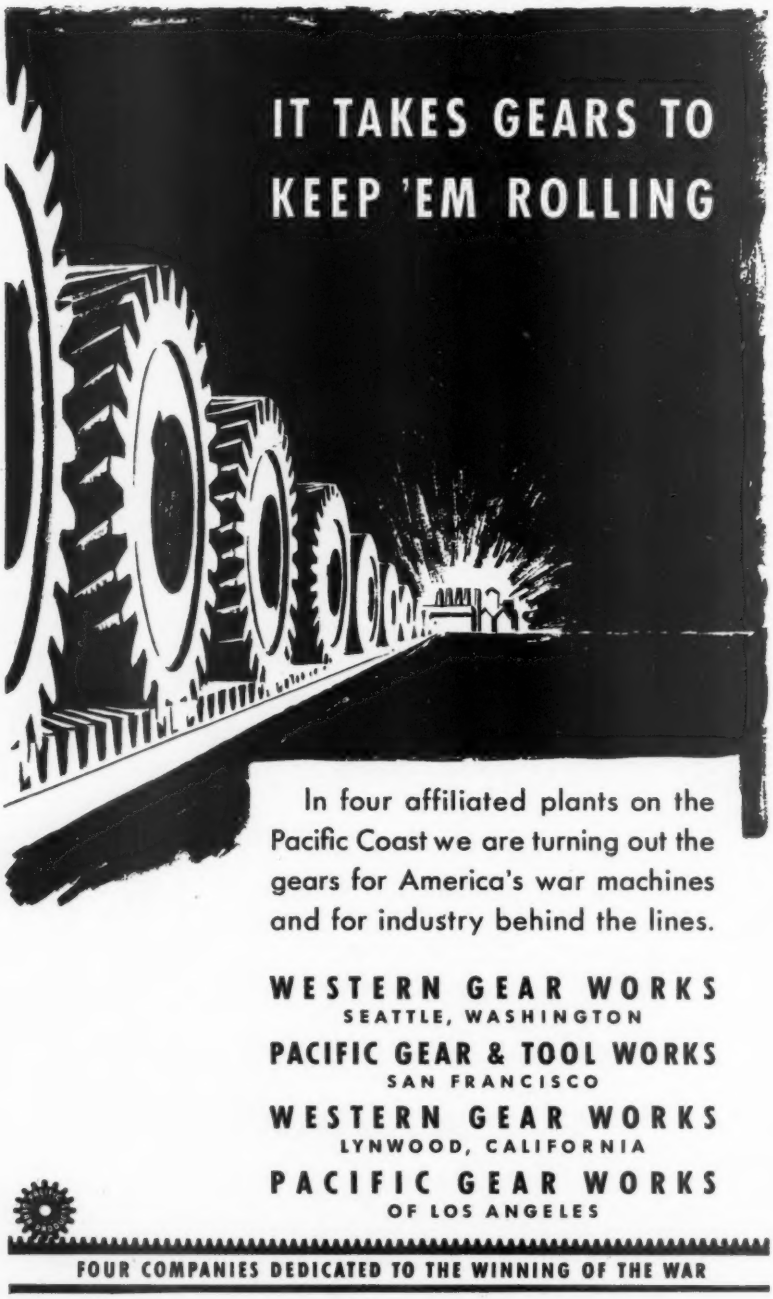
● The first aid graduates receiving certificates are:

**Standard Training:** Malka Bestel, Belva Bruger, Florence Cramer, Marion Clark*, Marie Davis, Mildred Drake, Marie Eckert, Ellen Failing*, Edith Frewing, Arleen Hughes.

Loraine Hochhalter, Jean Hewitt, Mary Hyde*, Irene Junge, Margaret Knapp, Wilma Karnath, Christine Kropp, Minnie Kielpinski*, Joan Palmer, Ellen Quilici*.

Doris Ritchie, Rzella Scott, Frances Smith, Joy Smith, Florence Smith*, H. E. Adair, Jack Arvidson, C. L. Baker, Leo Burling, Stanley Burgen.

C. B. Clemons, L. W. Cramer, E. M. Curry, T. E. Dear, L. R. Dungan, Sr., Tom Finlayson, Ivar Fenne, W. G. Goodwin, T. R. Goodwin, Dale Hamilton.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E. M. Huckins, Charles Meyers, Jr., R. E. Moisant, Paul McDonald, Don Persons, Jerry Plue, John Roberts, Vern Reeves, Del Seavert, R. J. Vahsholtz, Jay L. Wagner.

**Advanced Training:** Alyce Aslin, Lola Alder, Mary Allen, Suzella Allen, Marie Beaver*, Eva Baker*, Mary Jane Burns, Rae Bruger, Vera Berney, Dorothea Crosby*.

Harriet Clark*, Adeline Clemmer, Mabel Dayton, Jaen Epley, Justina Finley*, Margaret Gould*, Lucille Goldsbury*, Pansy Hutchison*, Erna Houtz*, Hazel Hamilton*.

Freda Hanny*, Verna Hansen, Thelma Howard, Viola Hudson; Elsie Heater, Pearl Jones, Agnes Keller*, Cherry Koplin*, Nettie Leistiko, Cleo Newquist.

Ella Owens, Bernice Ostenson*, Dorothy Pierce*, Doris Robertson*, Valeria Robertson*, Iris Roberts*, Gussie Roberts*, Mary Reynolds, Viola Rains, Marie Radamacher.

Mildred Rodd, Margaret Stevey*, Helen Scarbrough*, Jane Smith*, Iva Schwanz, Mary Sawyer, Irma Tobey*, Anna Tall, Frances Tate, Dora Witt*.

Lena Wallace*, Lillian Yoes, C. M. Addington, Chet Beals, Lyall Burnett, H. E. Burnett, J. H. Beaver, W. E. Buslach, Norbert Boyle, J. G. Brumsickle.

K. M. Collins, E. W. Clough, Frank Cox, A. E. Cadd, Carlton Duncan, A. Evanger, Lloyd Eiford, F. W. Flynn, F. R. Gallagher.

F. E. Hungate, L. O. Hutchison, H. H. Houtz, Mike Hughes, Jim Hays, W. C. Jacoby, S. Juve, Paul Kibbey, L. Koplin, W. A. Loughridge.

W. D. Lunzman, J. H. Miller, O. J. Perrault, J. C. Pollard, Walter Rains, Jack F. Robertson, Gil Russell, Sam Ring, Carl Rogers, Ed Stacie, C. H. Witt, Jr.

*Not mill employees.

**Instructors:** Mary Dole and J. M. Miller.

**Men's First Aid Team and Instructors:** J. H.Rickard, L. R. Mullineaux, J. B. Holmes, L. W. Bailie, D. D. Hutchison, E. W. White, G. Quilici, F. H. Weakley, H. A. Mason.

**M. "MIKE" RHINE, recently named to the new post of Manager of the Industrial, Federal and Marine Department of the General Electric Co.'s Pacific District, which comprises California, Arizona, the Hawaiian Islands and most of Nevada, by R. M. Alvord, Commercial Vice President.**

**Mr. Rhine's headquarters will continue to be in San Francisco, where for 15 years he has been manager of General Electric's local industrial department. He is a native son of California, a graduate of the University of California and has been continuously with General Electric for 38 years.**

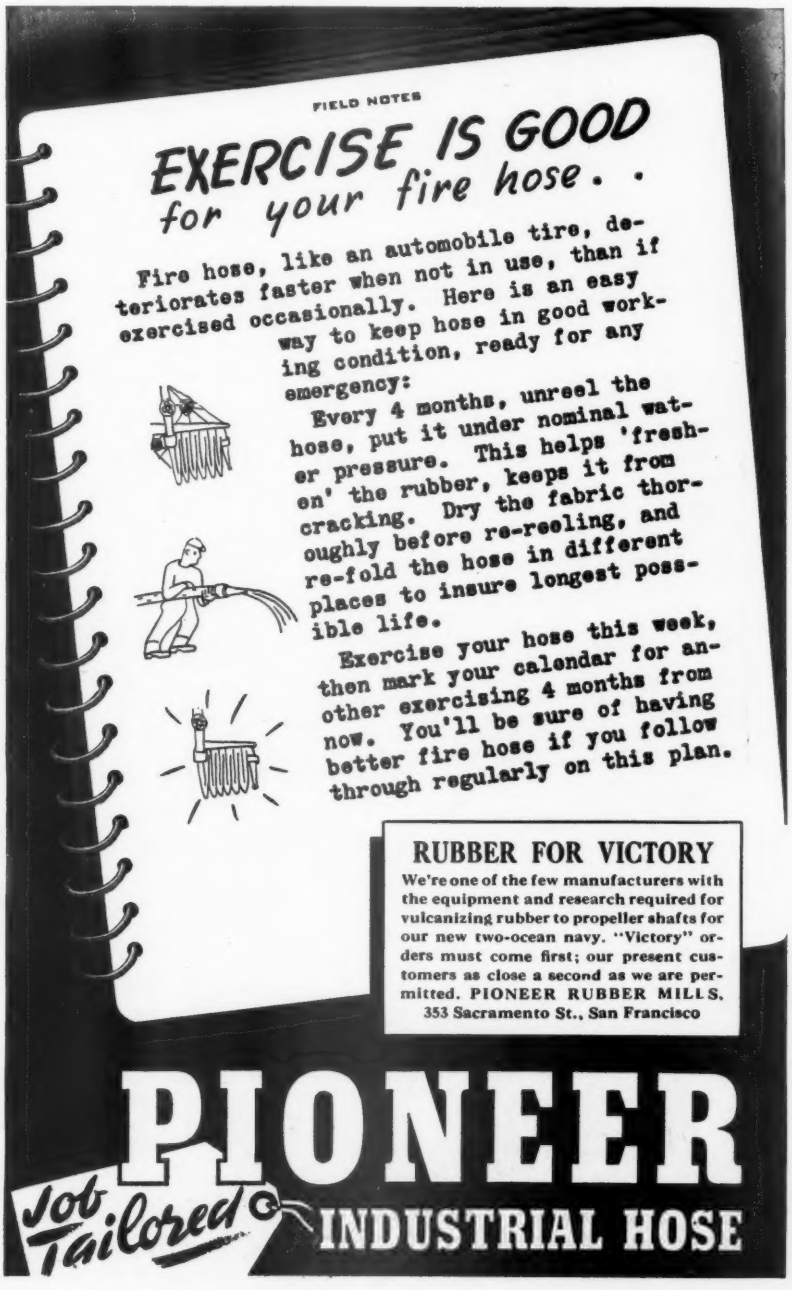
## Russell Scott Passing Cigars

● Russell Scott, research chemist for Puget Sound Pulp & Timber Co., is passing out cigars so he can brag about his new daughter, Barbara, born the morning of March 16th at a Bellingham hospital. Russ, who is the highest scoring bowler in the Puget Pulp League, claims he will have the little lady bowling 200 by the time she is in kindergarten. Both mother and baby are doing fine.

## Gillihan Conducting St. Helens First Aid Classes

● Chester Gillihan, safety engineer, St. Helens Pulp and Paper Company, St. Helens, Oregon, is now conducting a first aid class of twenty men employed at the mill. In March he concluded a town class in first aid, in which 42 persons were enrolled, 27 of which are paper mill employees.

Mr. Gillihan estimates that 30 per cent of the 600 employees of St. Helens Pulp and Paper Company are first aid trained.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EXERCISE IS GOOD
for your fire hose. .
Fire hose, like an automobile tire, deteriorates faster when not in use, than if exercised occasionally. Here is an easy way to keep hose in good working condition, ready for any emergency:
Every 4 months, unreel the hose, put it under nominal water pressure. This helps 'freshen' the rubber, keeps it from cracking. Dry the fabric thoroughly before re-reeling, and re-fold the hose in different places to insure longest possible life.
Exercise your hose this week, then mark your calendar for another exercising 4 months from now. You'll be sure of having better fire hose if you follow through regularly on this plan.
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## Bakkom Teaching Two First Aid Groups

● Melvin Bakkom, machine tender and veteran employee of the Puget Sound Pulp mill in Bellingham is taking his first aid work seriously. After finishing the regular Red Cross course at the mill, he went further and qualified as an instructor. He is now teaching two groups at Ferndale; the air and fire wardens of the community as well as a mixed class of teachers and business men.

## Zimmerman On Eastern Trip

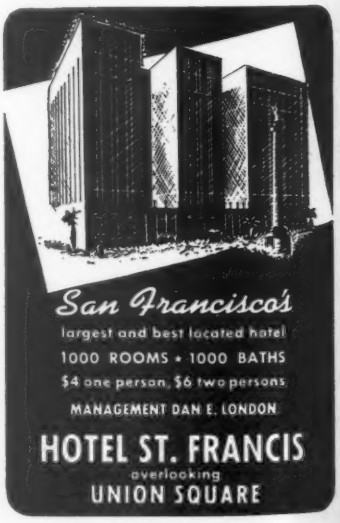
● Arthur Zimmerman, general manager, Pacific Paperboard Company, Longview, Washington, left for the Atlantic Coast April 7th, on a business trip of about a month. He is expecting to spend most of his time in New York City and Washington, D. C.

## Keyes Wins Badminton Title for Third Time

● For the third year in a row Bill Keyes, electrician at the Puget Sound Pulp & Timber Co., is Northwest Washington badminton champion. On March the 21st he won in the men's doubles, and then teamed up with Mrs. Keyes to keep the mixed doubles trophy in the family. Bill is also handy with left-handed golf clubs, being Northwest Washington left-handed golf champ and runner up in state competition.

## Hartwig Speaks Before Boys' Club

● O. R. Hartwig of Portland, supervisor of safety and social security advisor for Crown Zellerbach Corporation and Rayonier Incoroprated, was principal speaker at a "Dad's Night" program sponsored by the Boys' Club of Roosevelt high school, Port Angeles, Wash., on March 17. Mr. Hartwig advised the boys to improve themselves for their work in the world by securing all the education possible and gave them some excellent precepts to follow, drawing upon his experiences and observations in industry.



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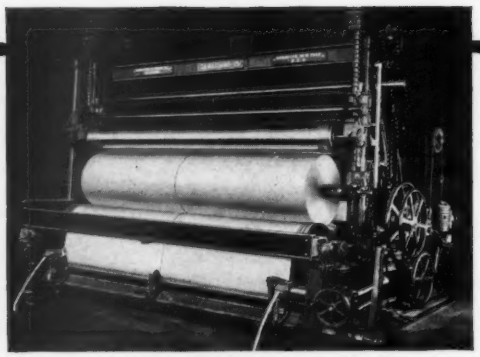

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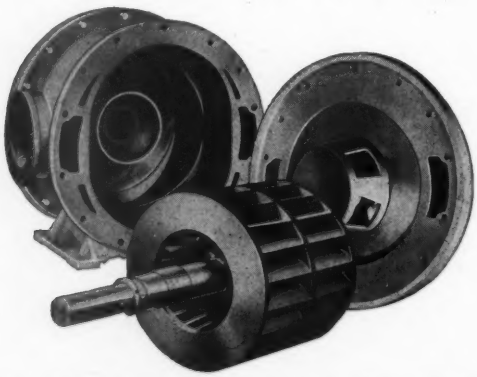

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